Event Storming

From Sticky Notes to Code

Agenda

- Event Storming
- CQRS + Event Sourcing
- TDD Example

Event Storming

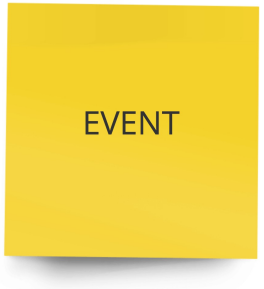
A workshop-based method to explore a domain

Historical Fact

Imperative Action

Policy/Rule applied to previous events

Legend



Historical Fact

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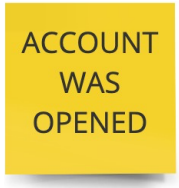


Bank Account Example

ACCOUNT WAS OPENED

MONEY WAS DEPOSITED

Bank Account Example

Bank Account Example

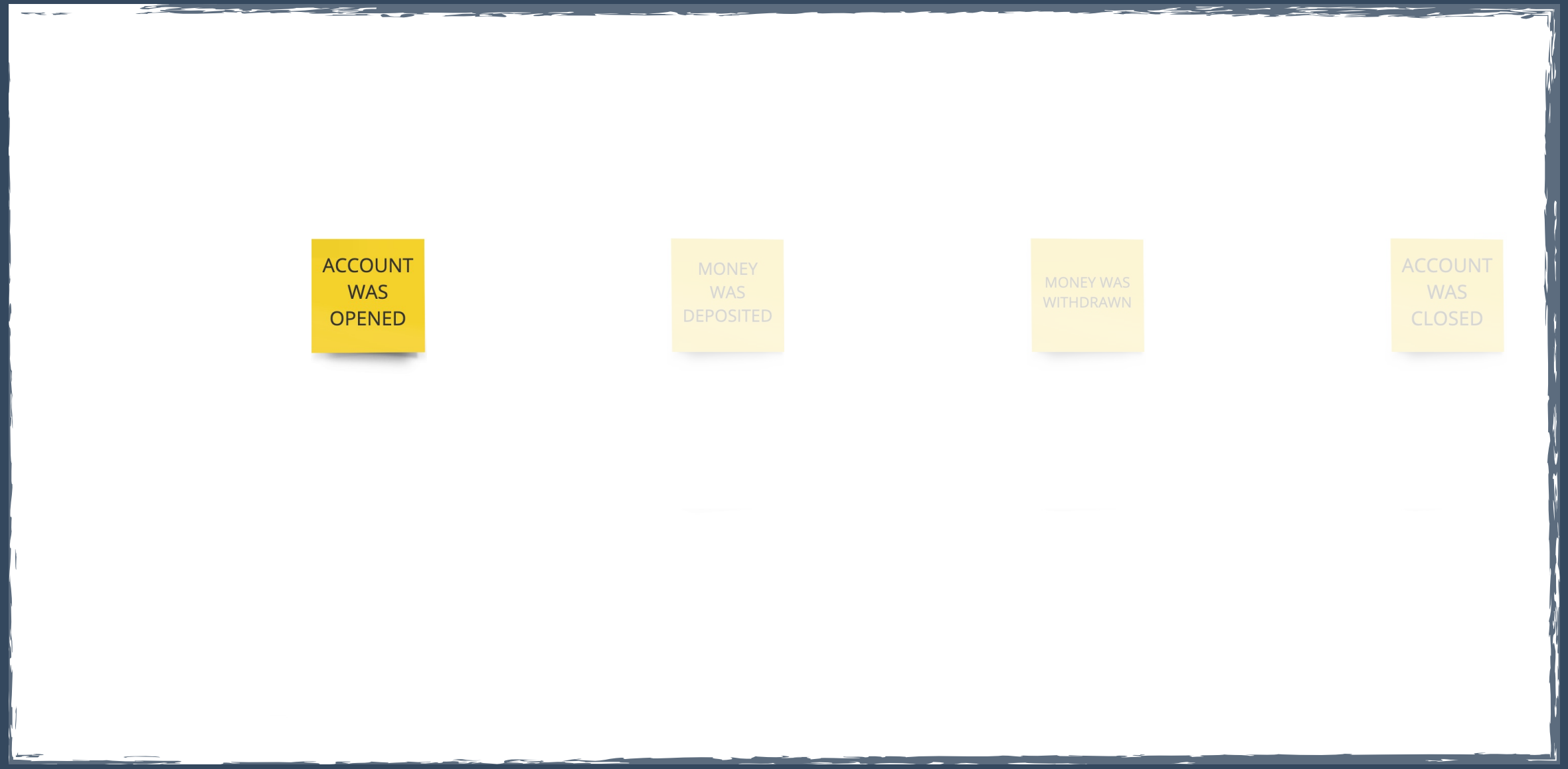
Bank Account Example

Historical Fact

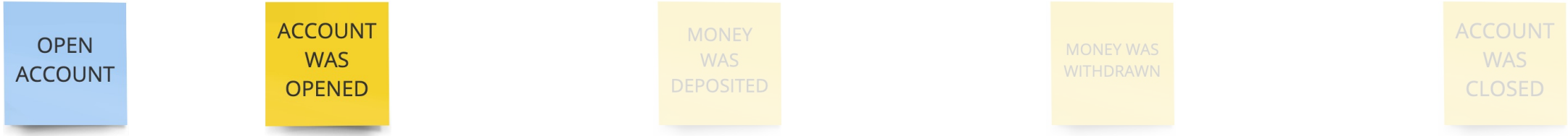
Imperative Action

Policy/Rule applied to previous events

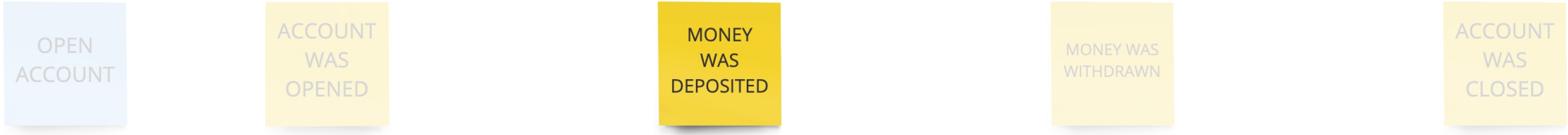
Legend



Bank Account Example



Bank Account Example



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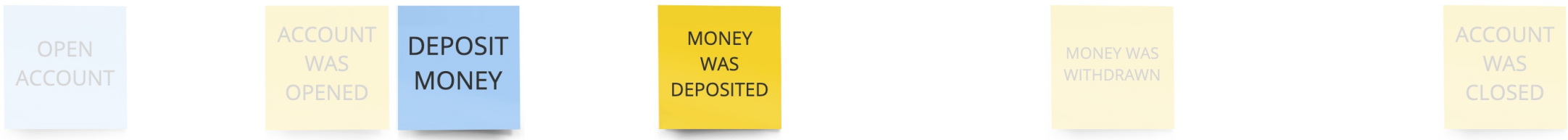

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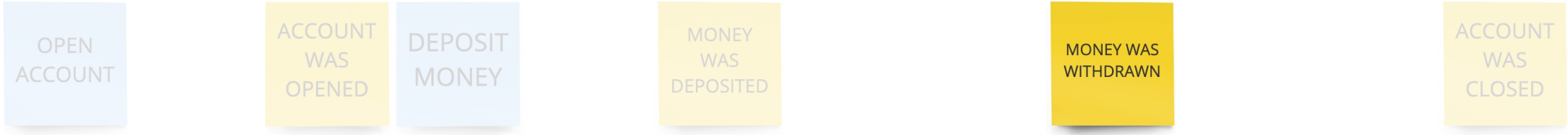

Bank Account Example

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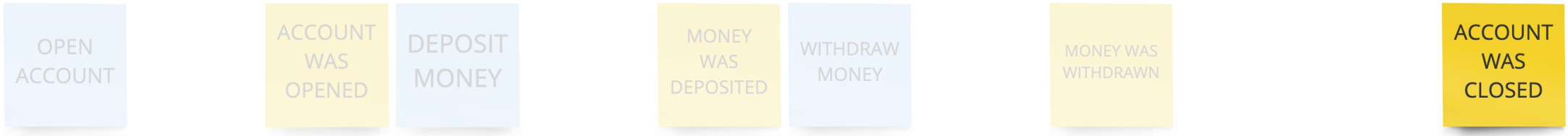

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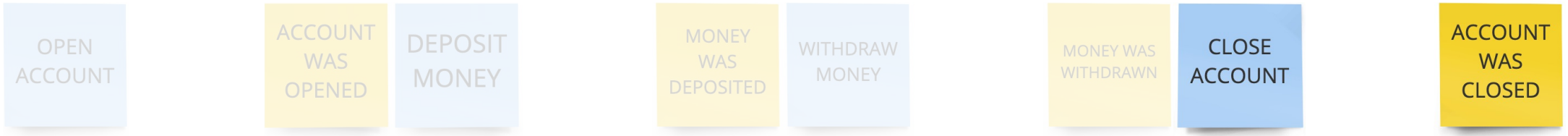

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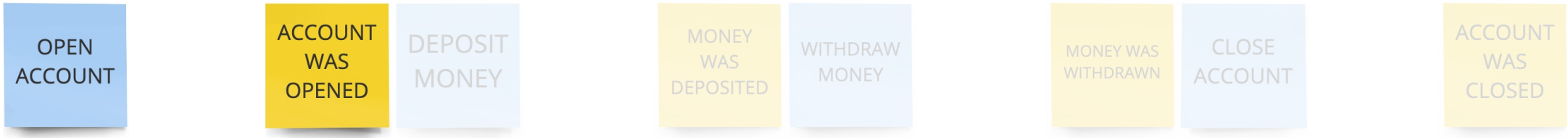

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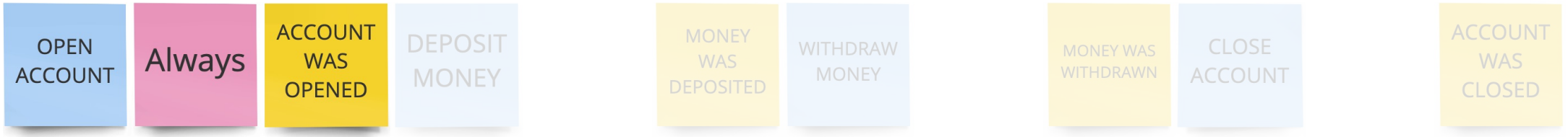

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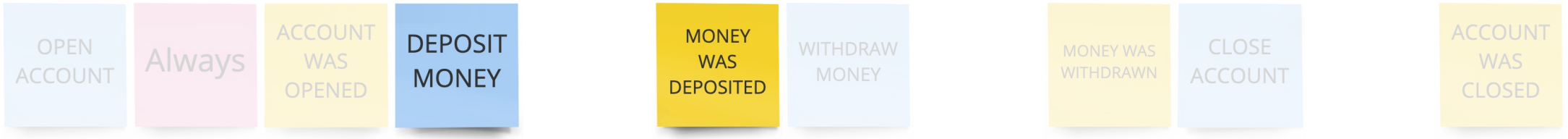

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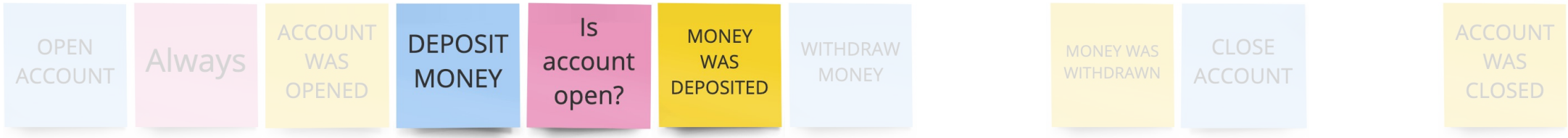

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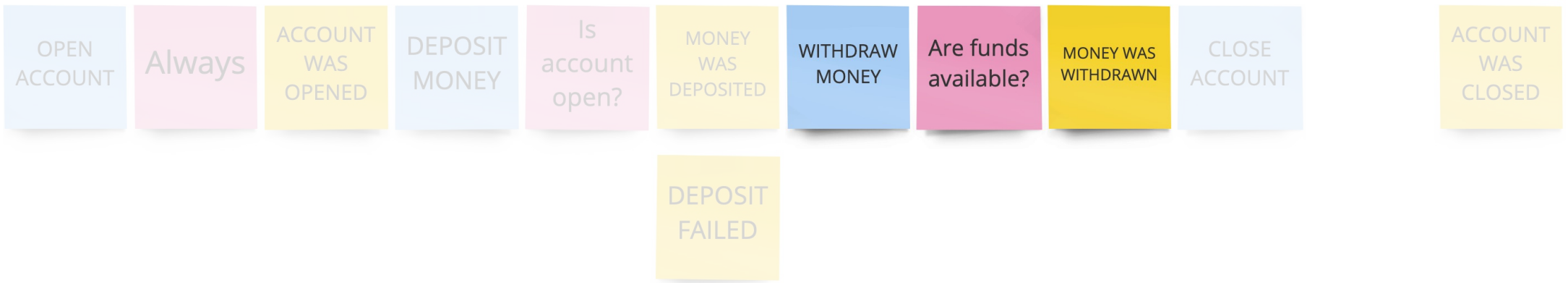

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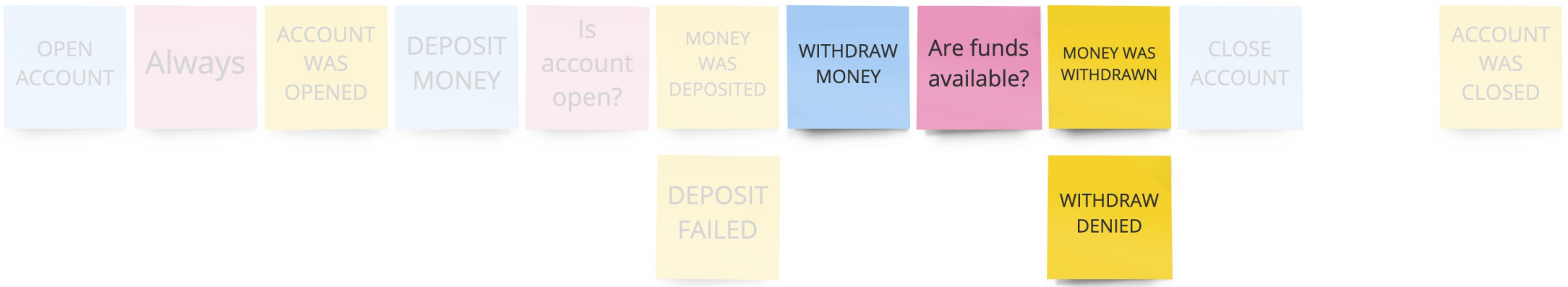

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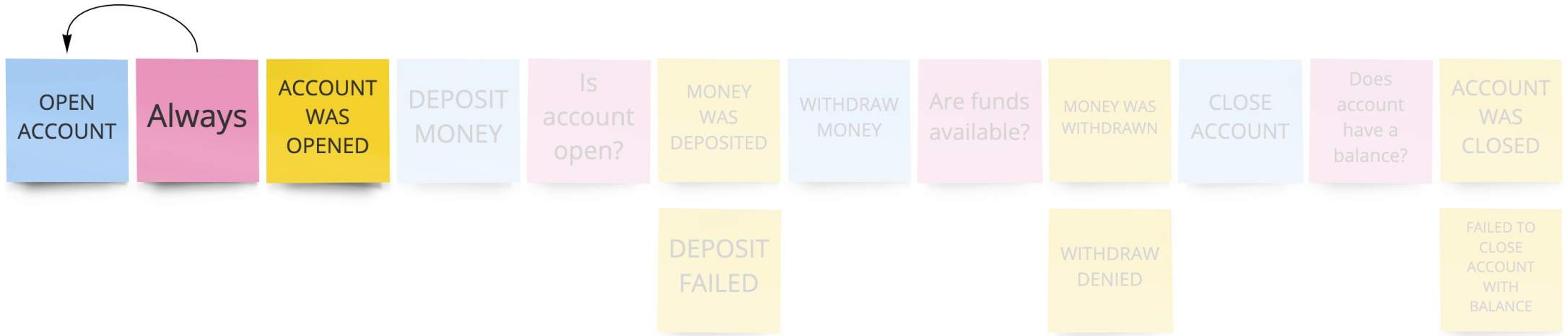

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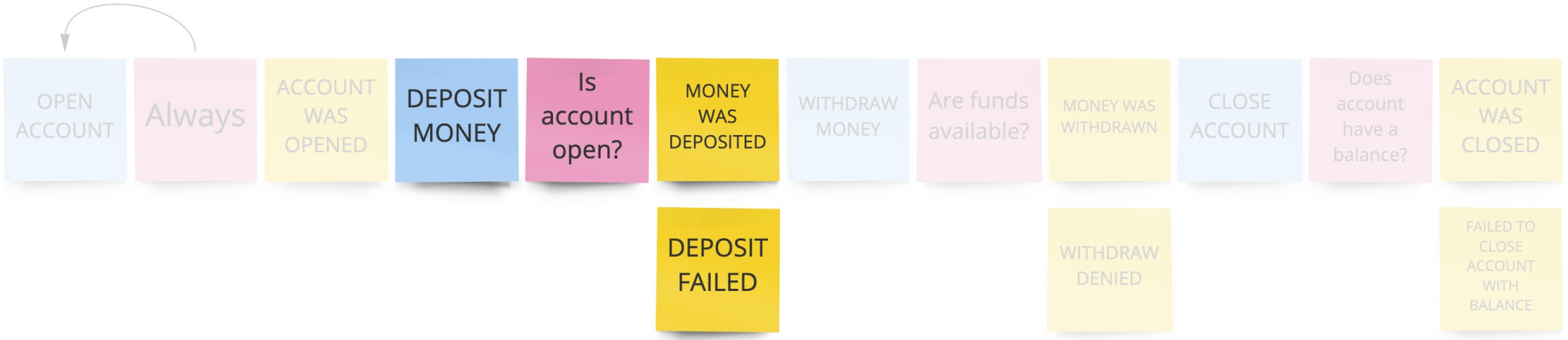

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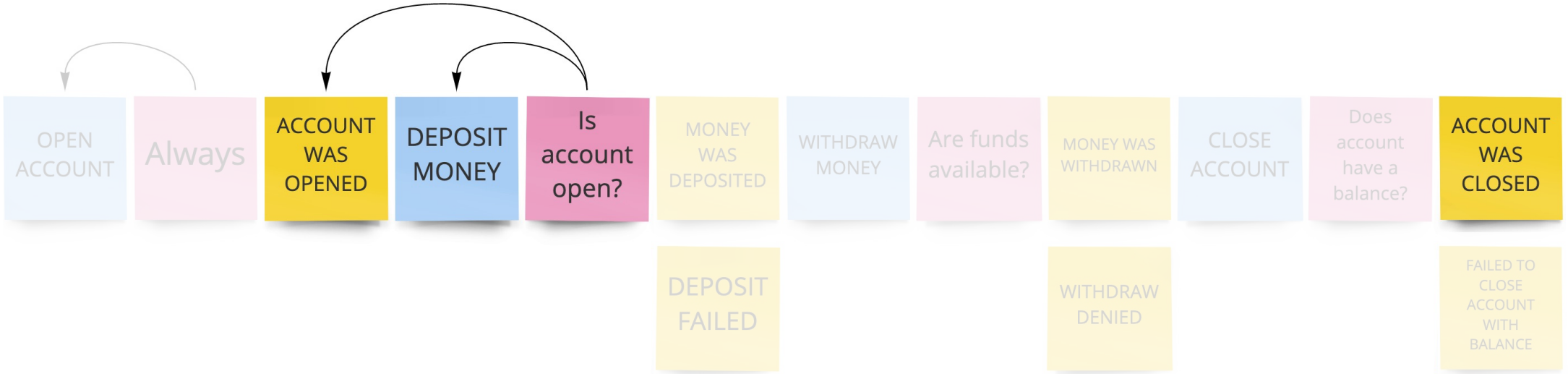

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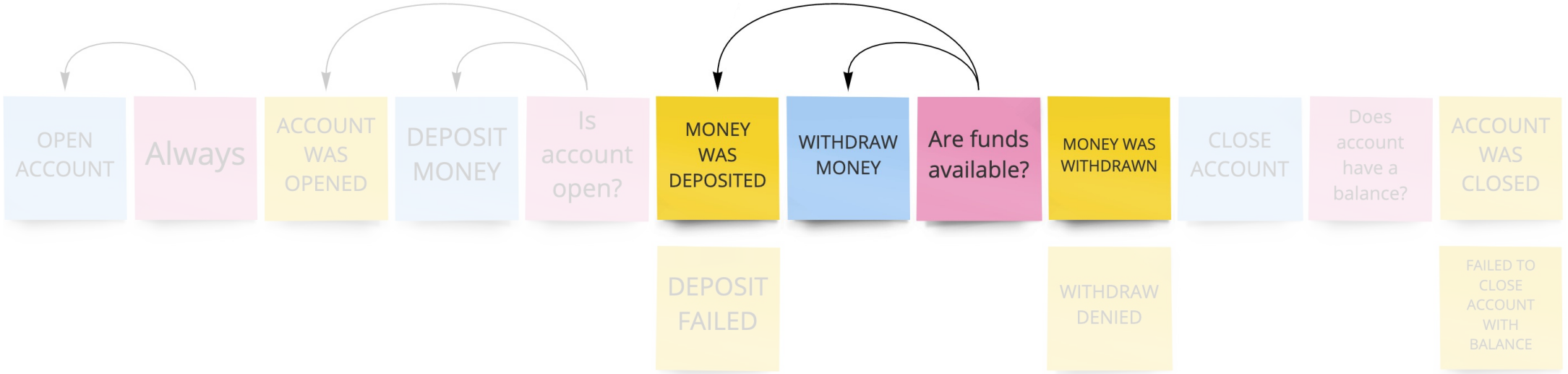

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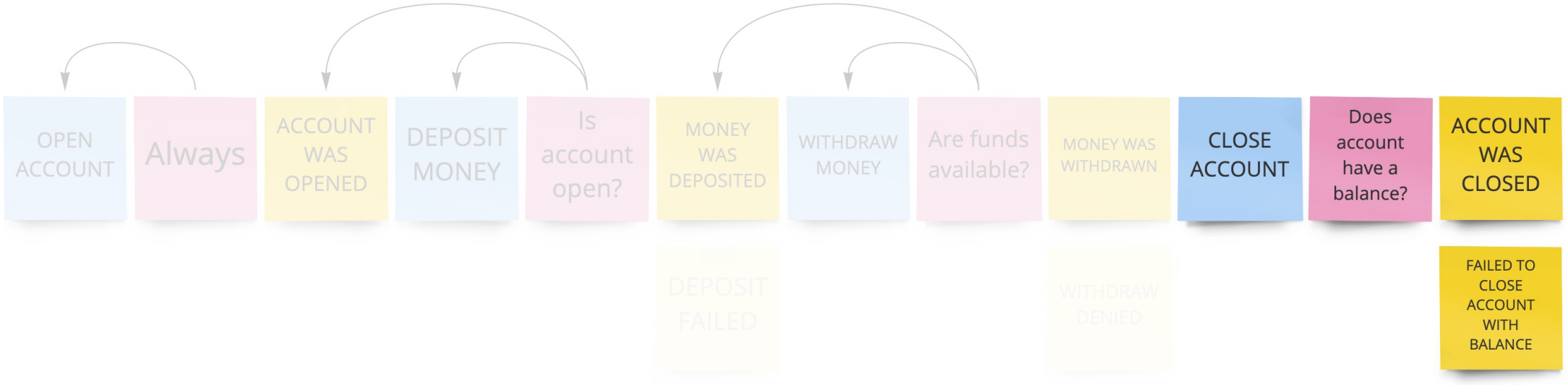

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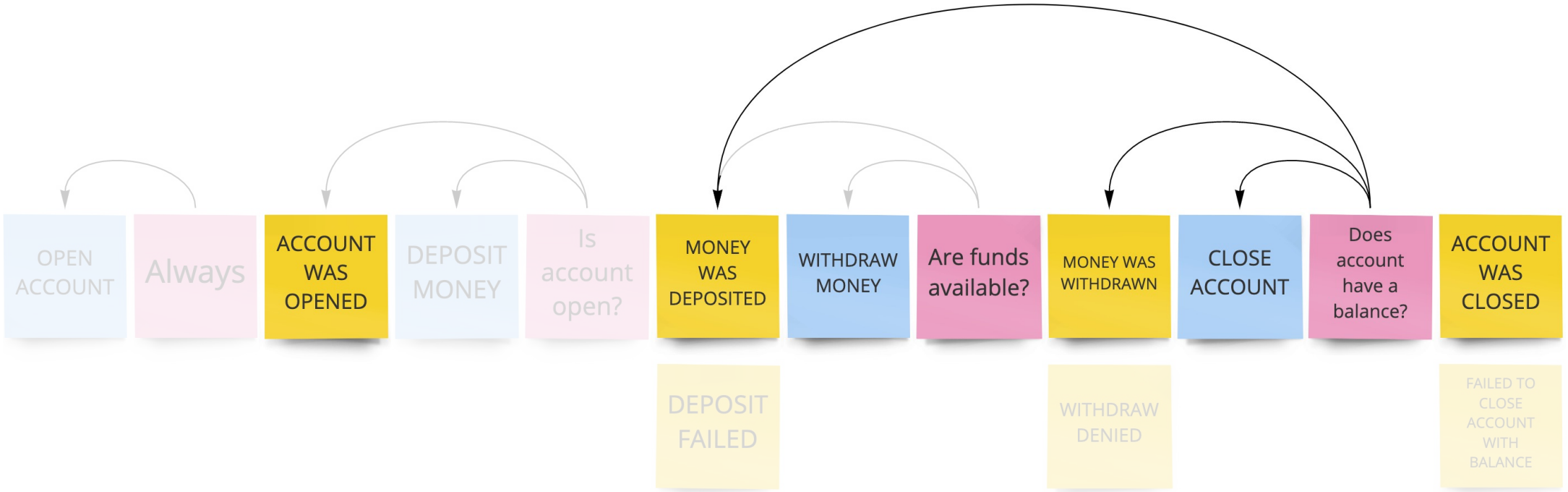

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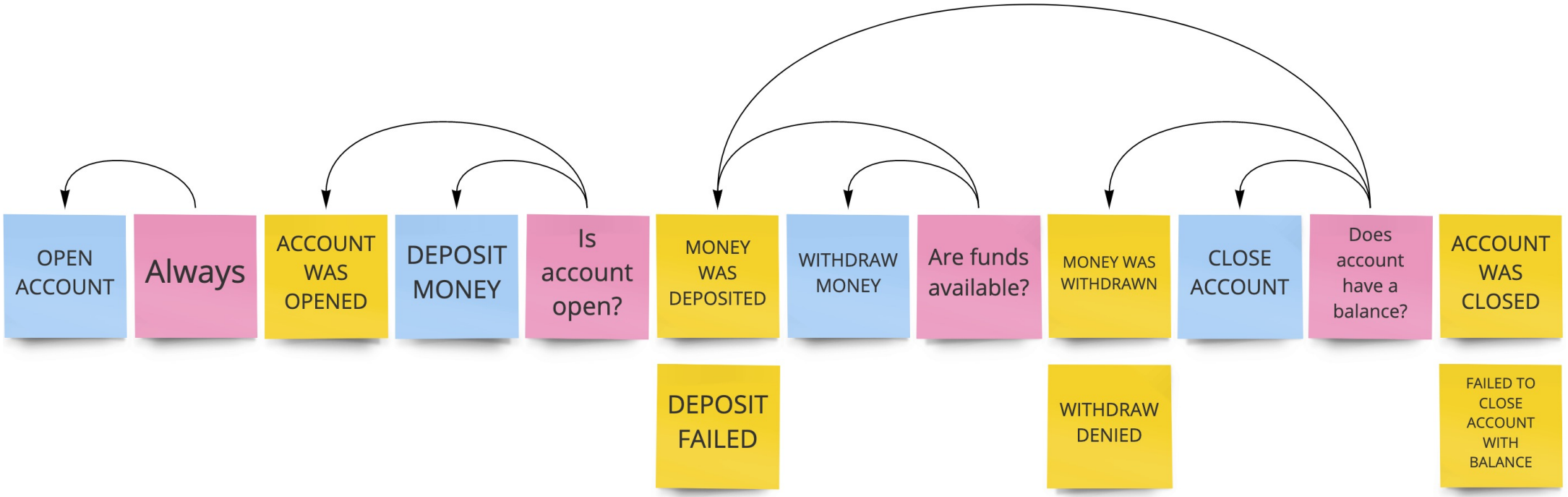

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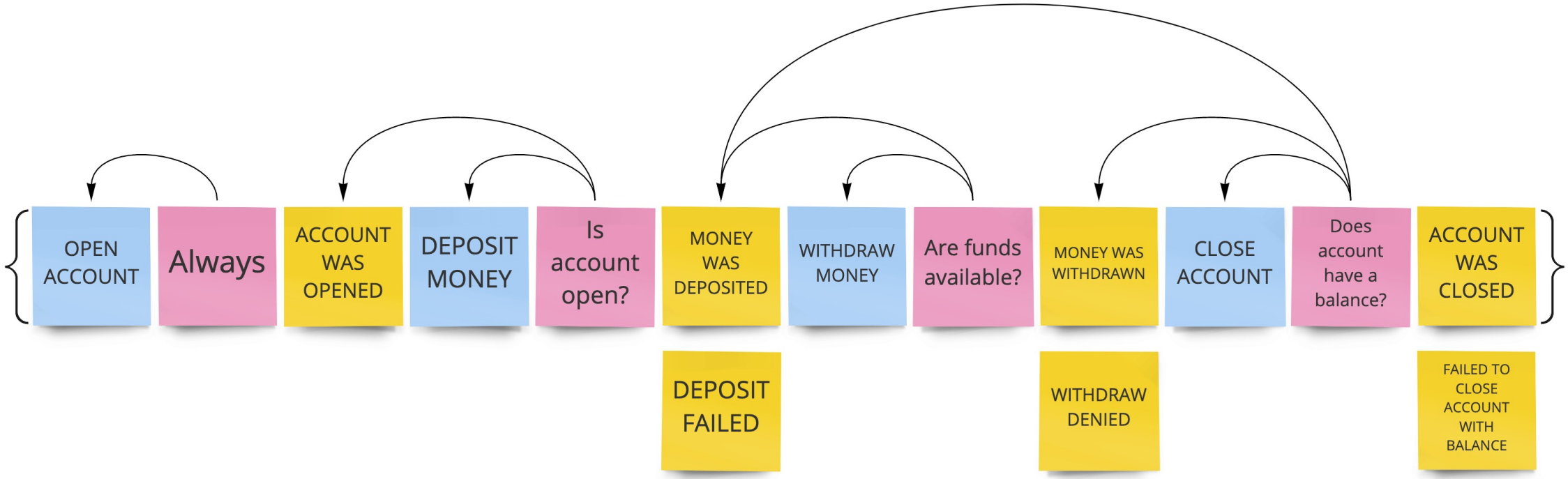

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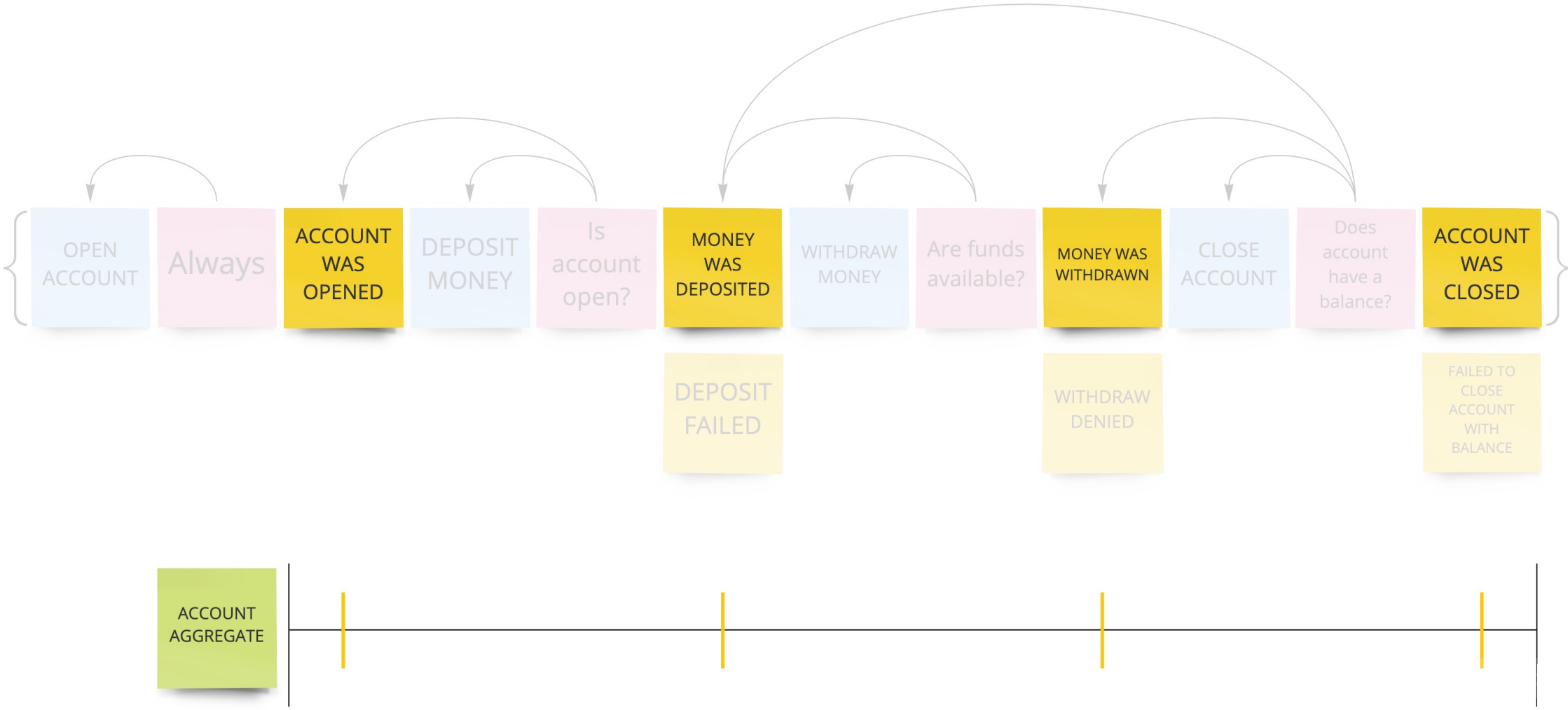

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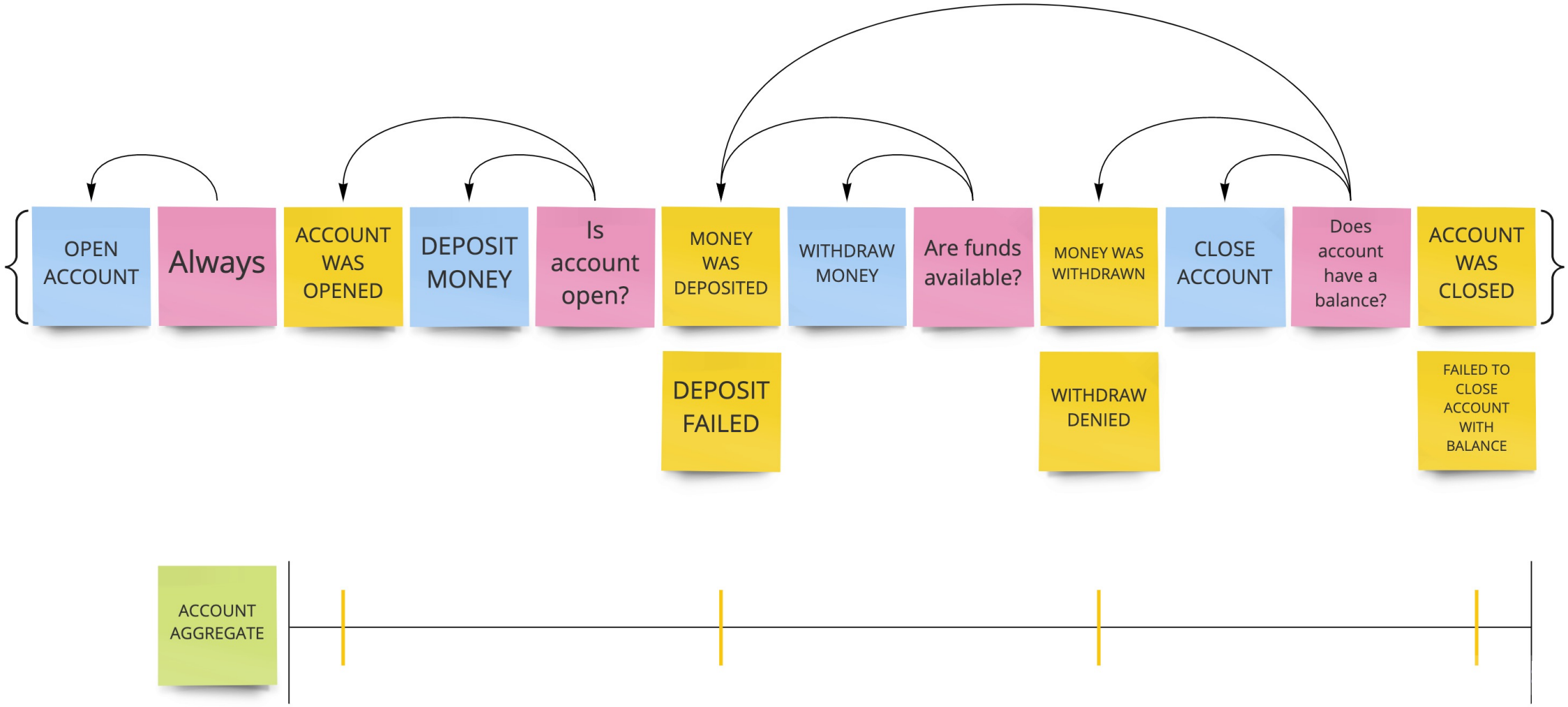


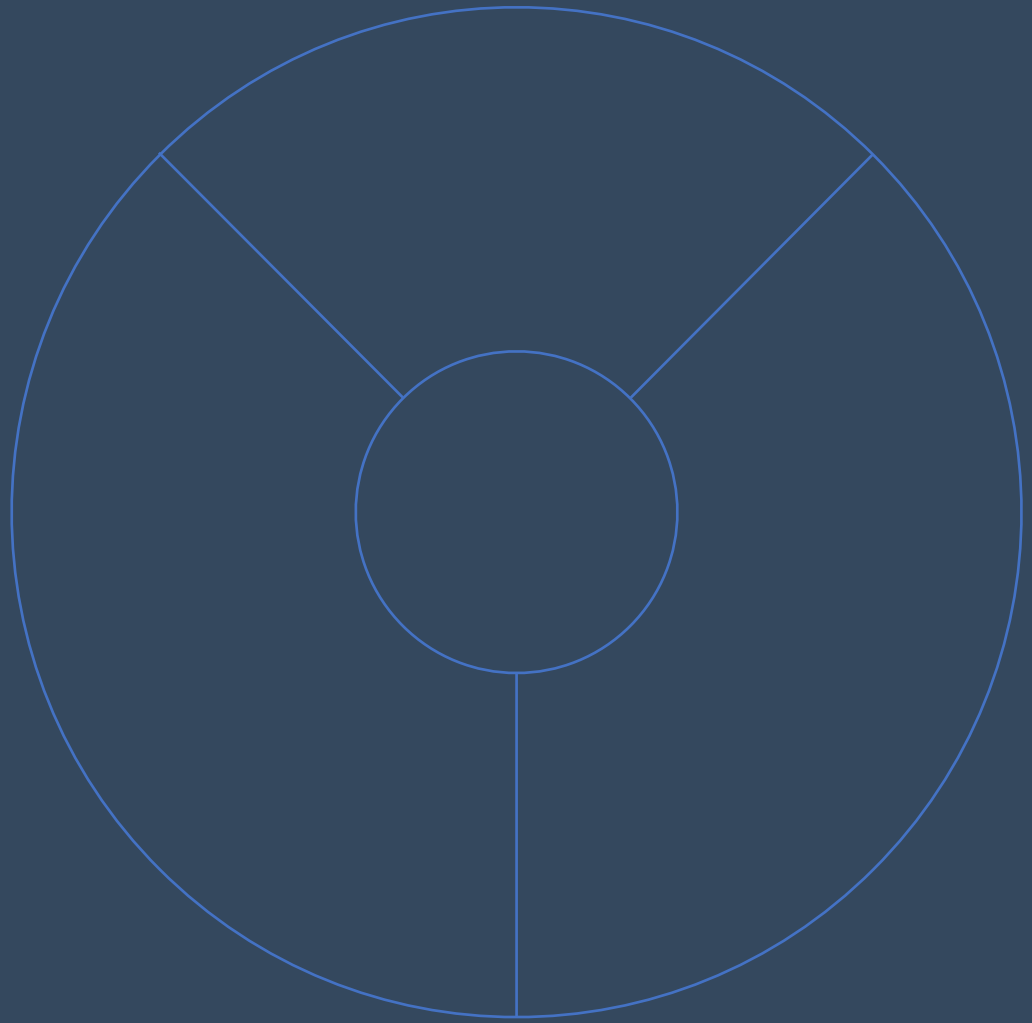
Bank Account Example

CQRS + Event Sourcing

Command Query Responsibility Segregation

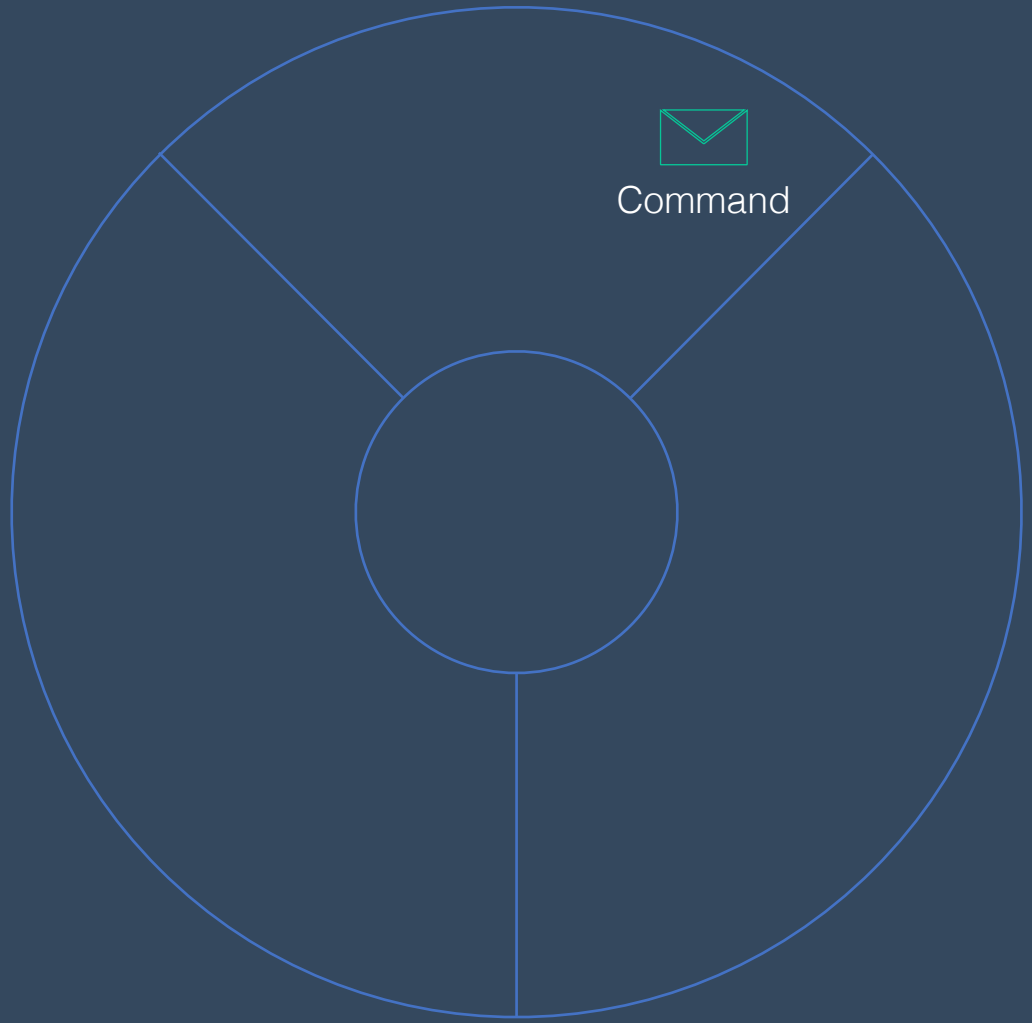
CQRS-ES

API



CQRS-ES

API



CQRS-ES

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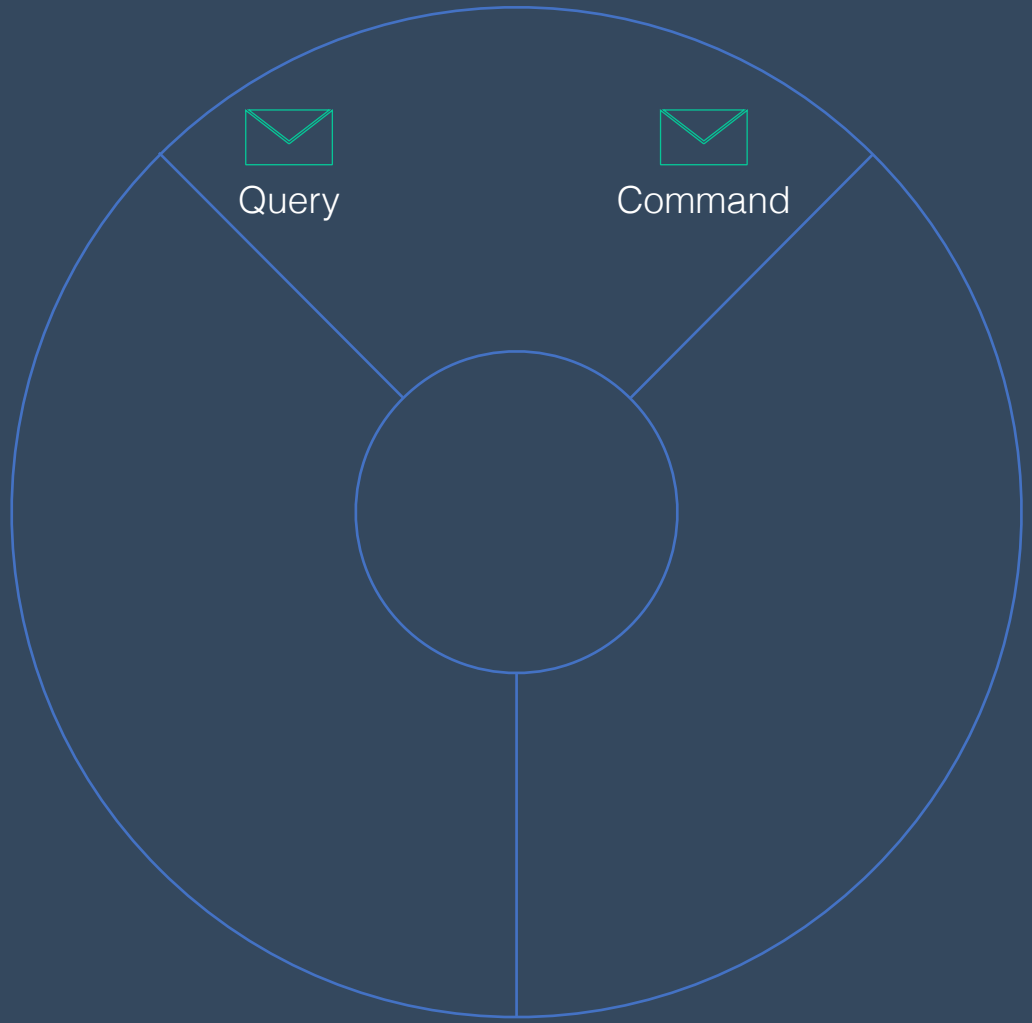

CQRS-ES

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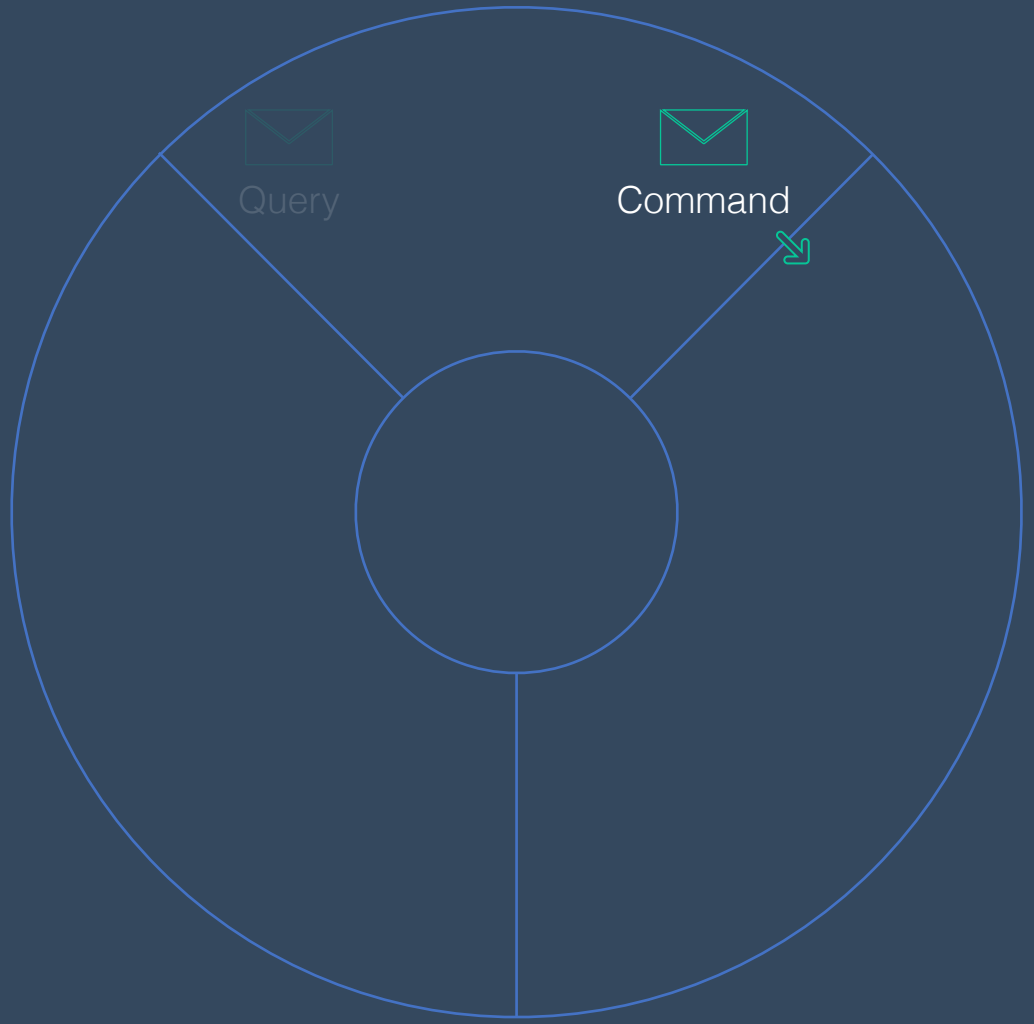
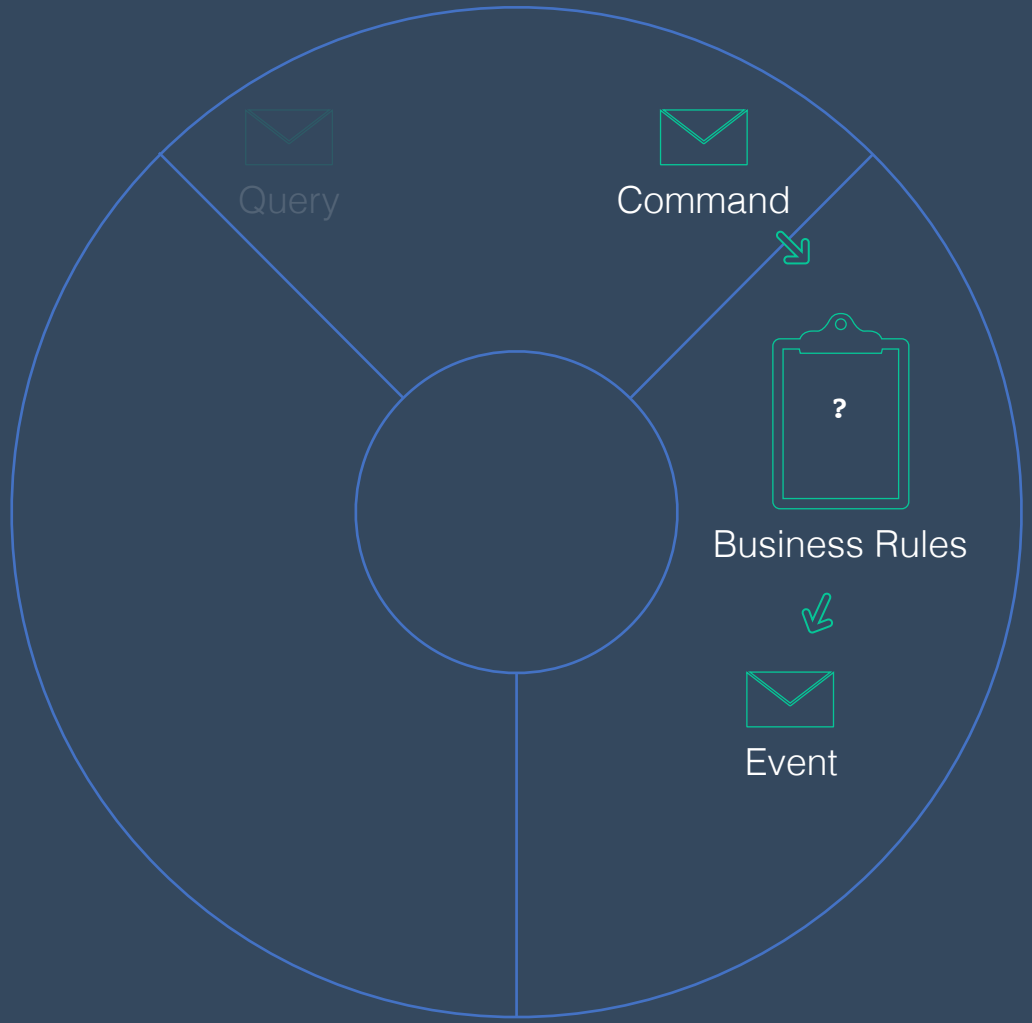


Write Model

CQRS-ES

API



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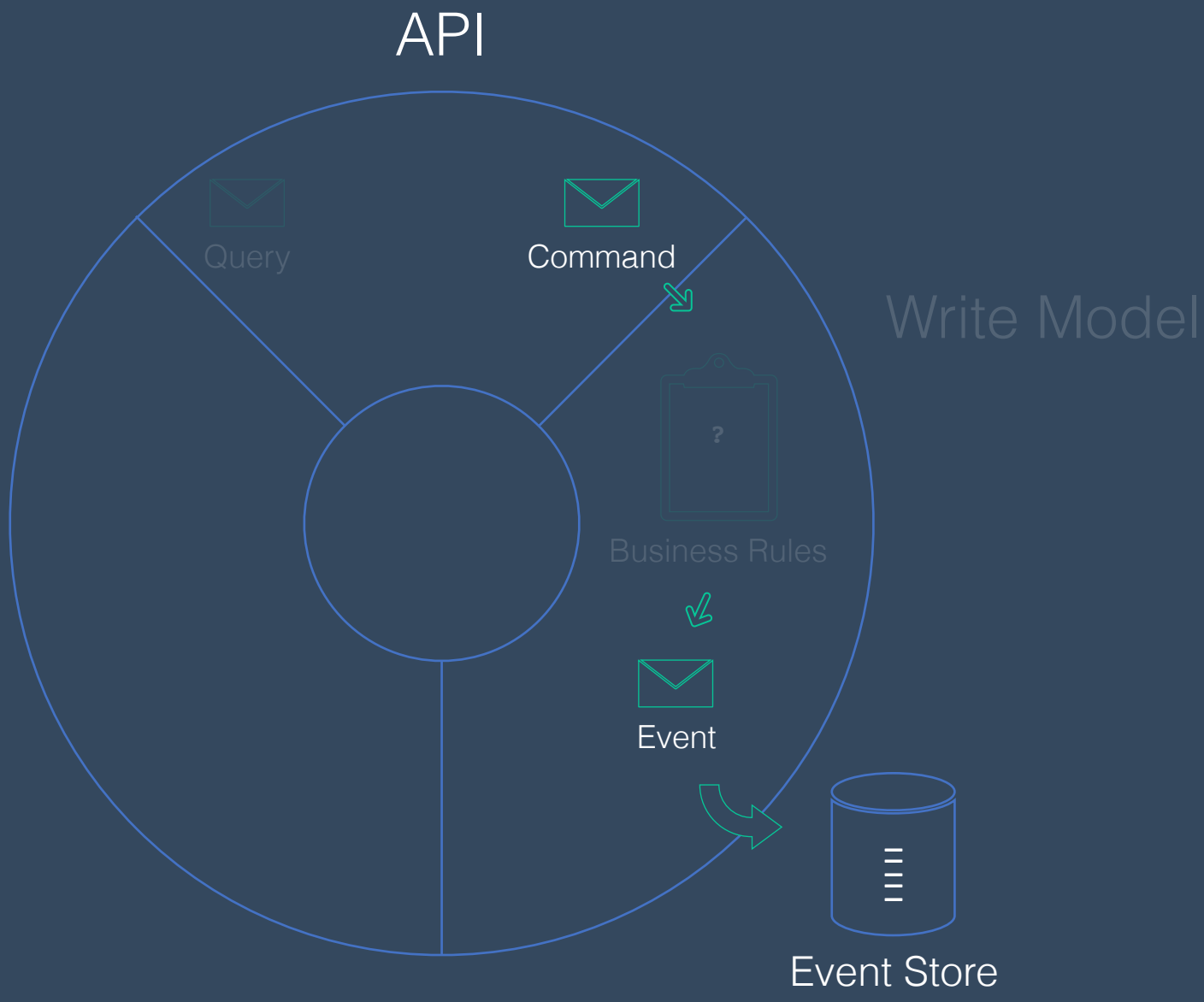
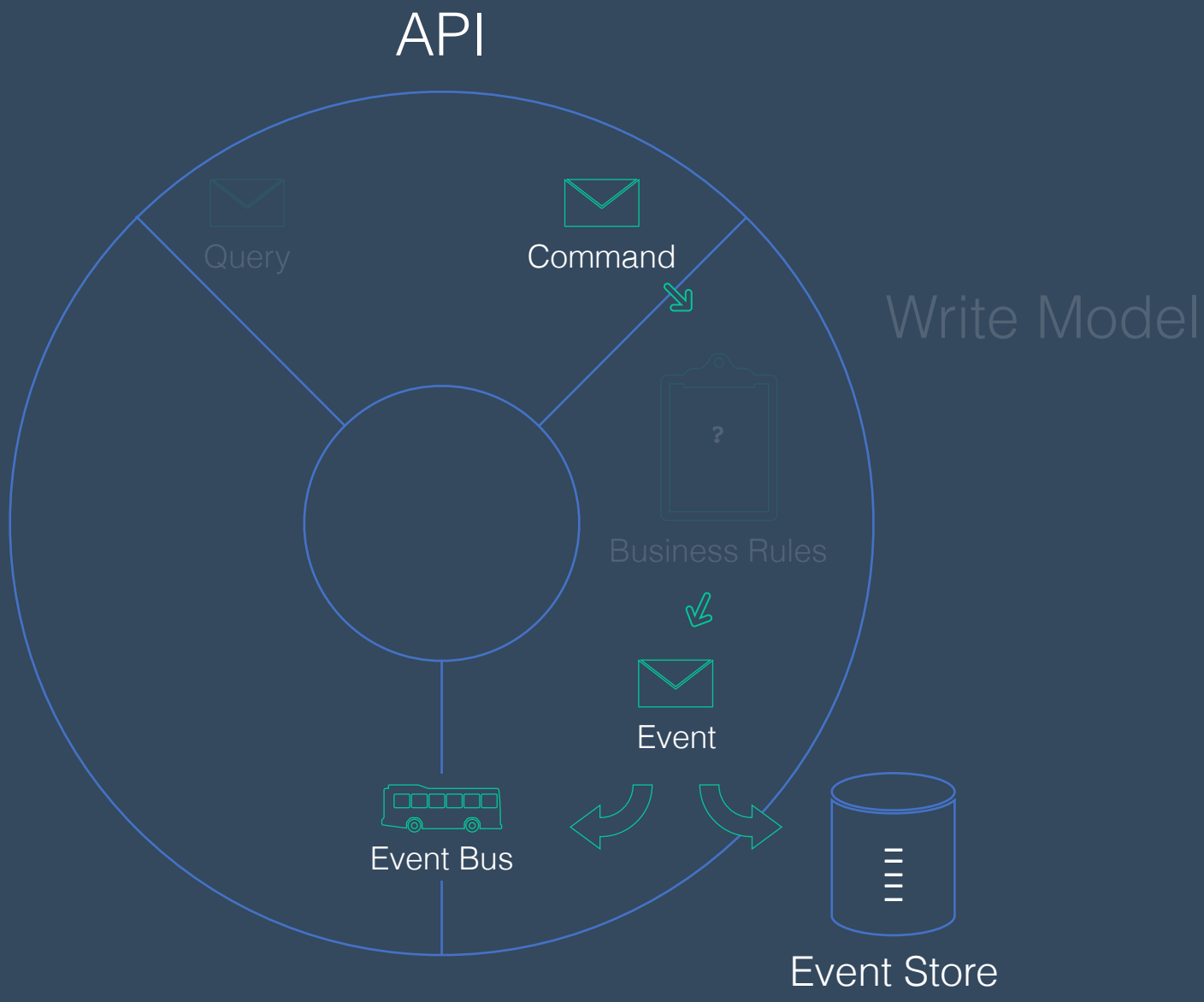

API
Query
Command
Write Model
?
Business Rules
Event
Event Store

CQRS-ES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CQRS-ES

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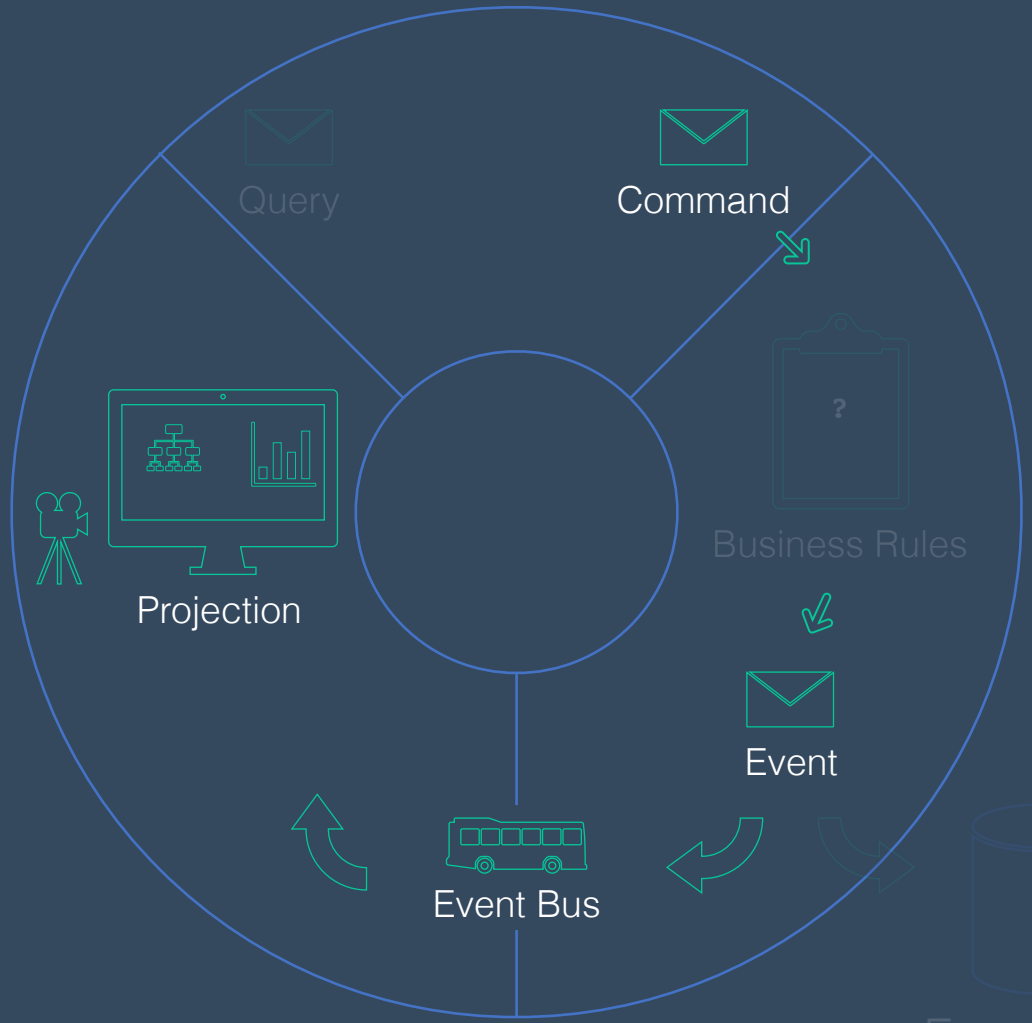
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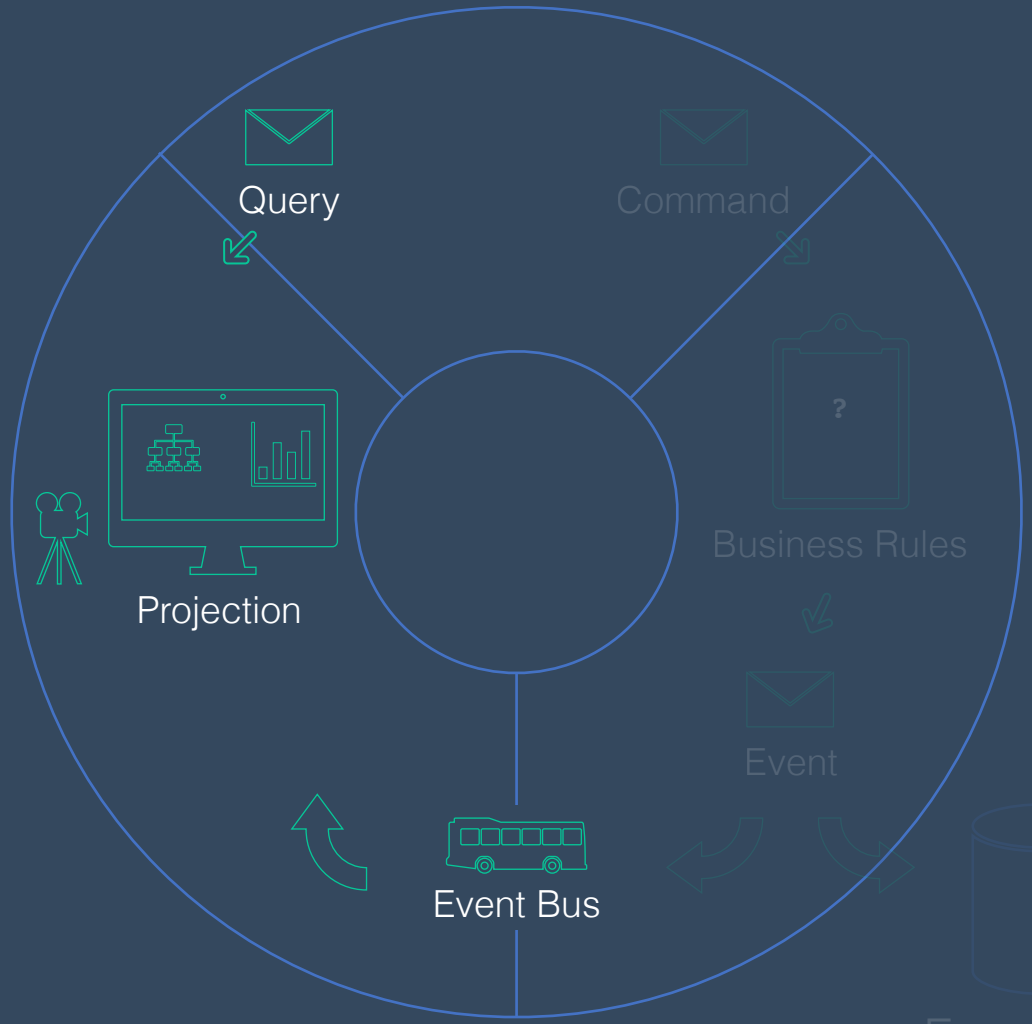
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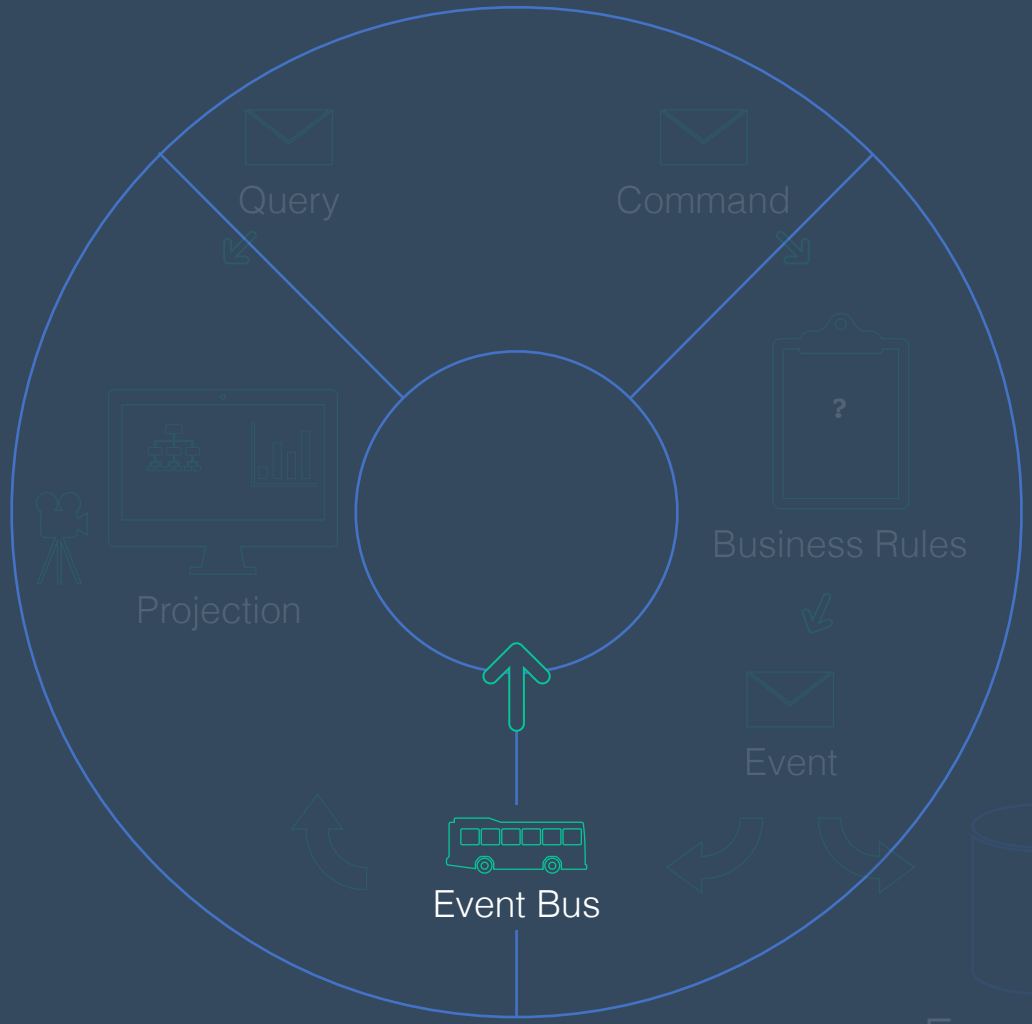
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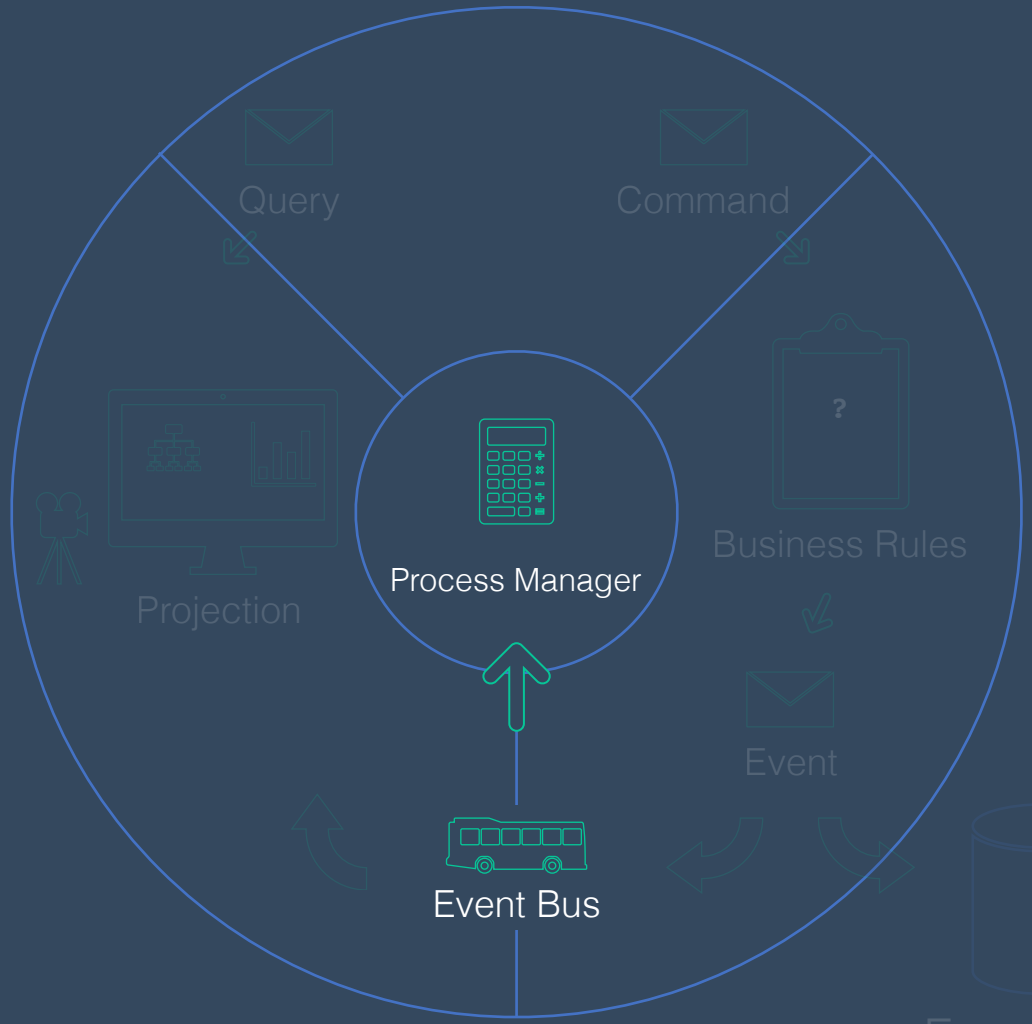
Query
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Process Manager
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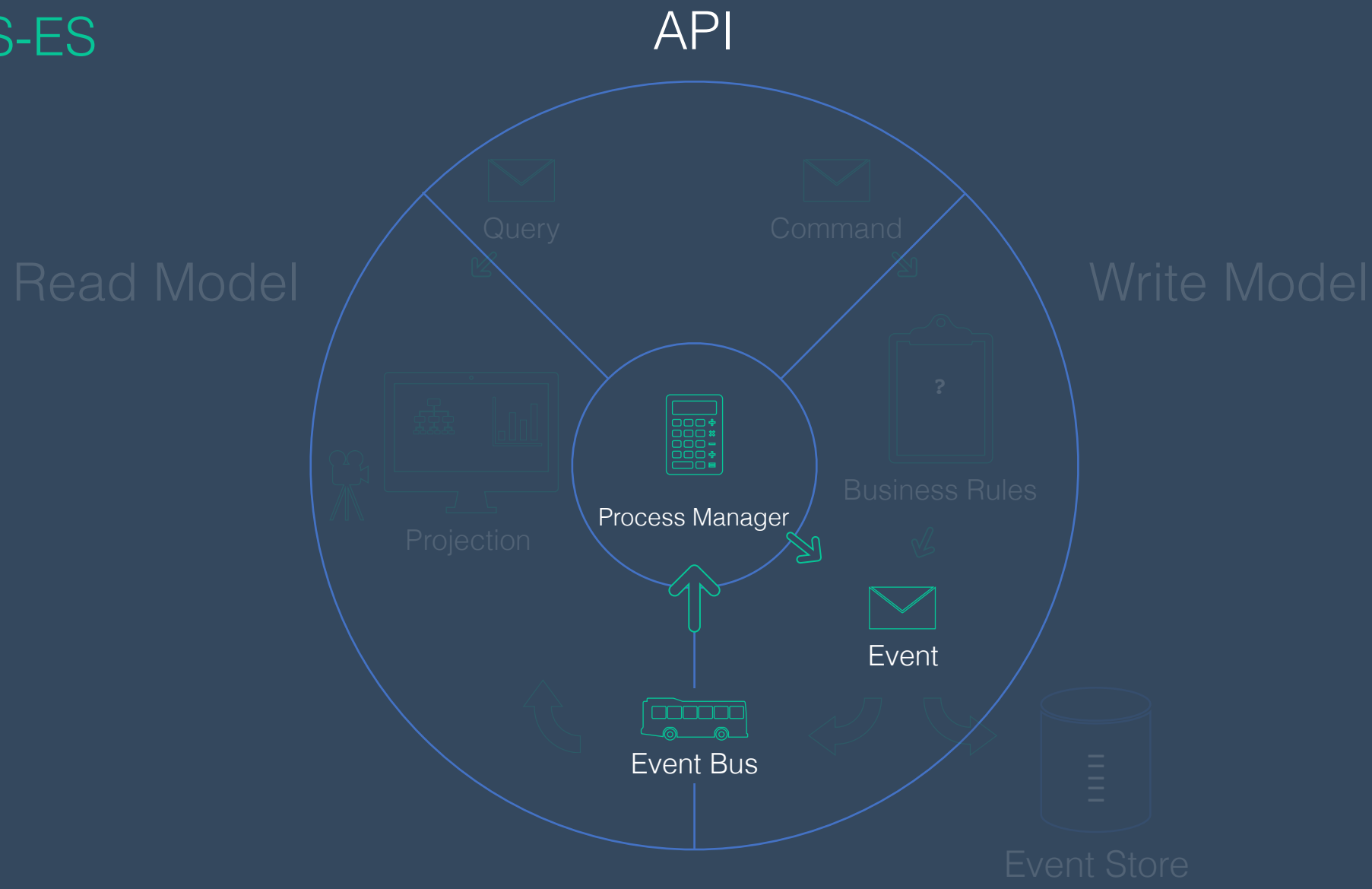
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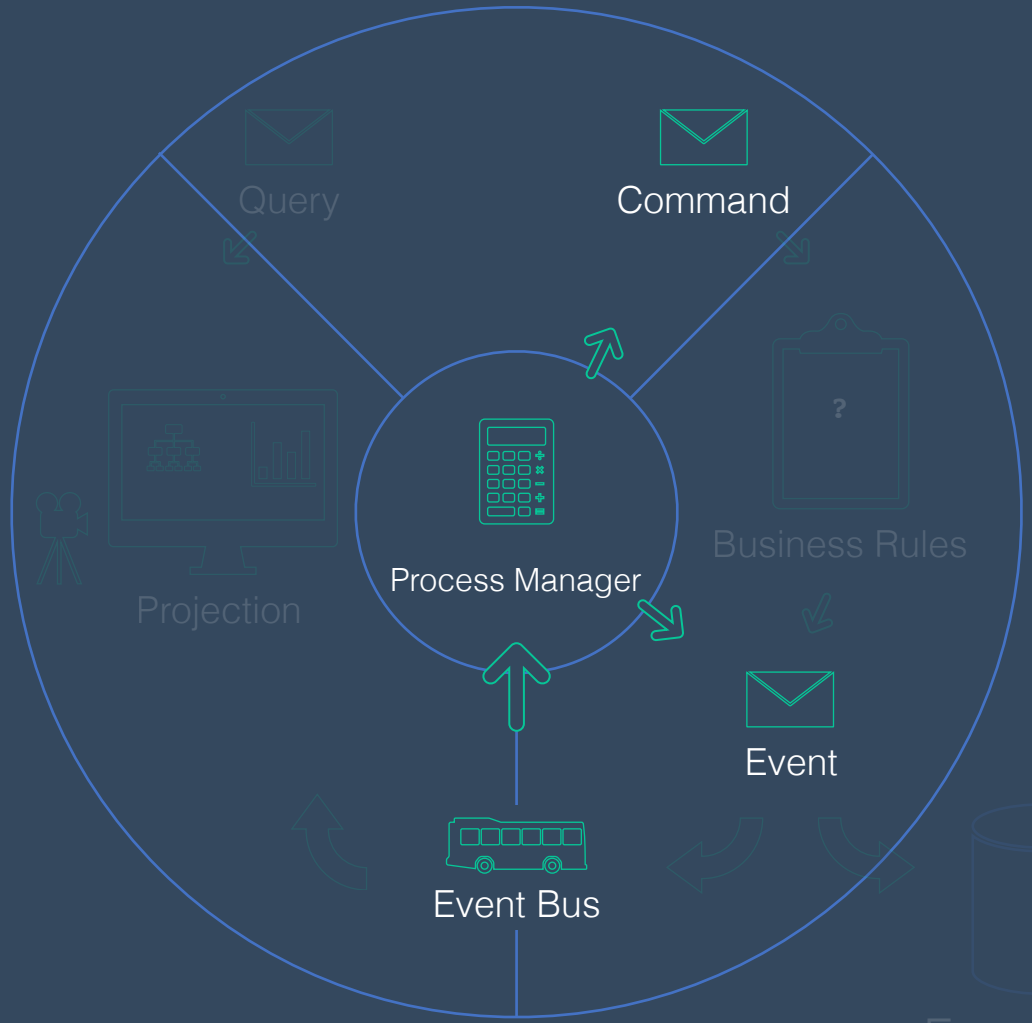
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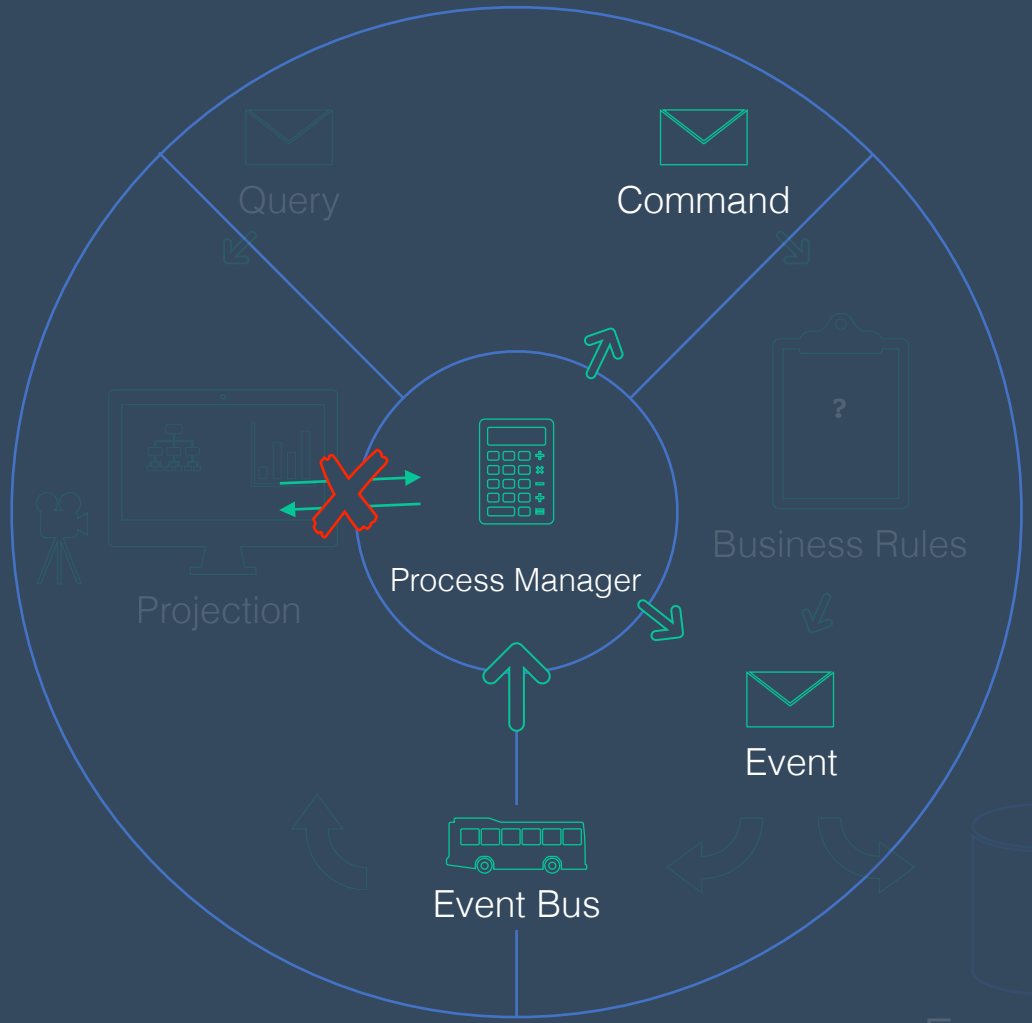
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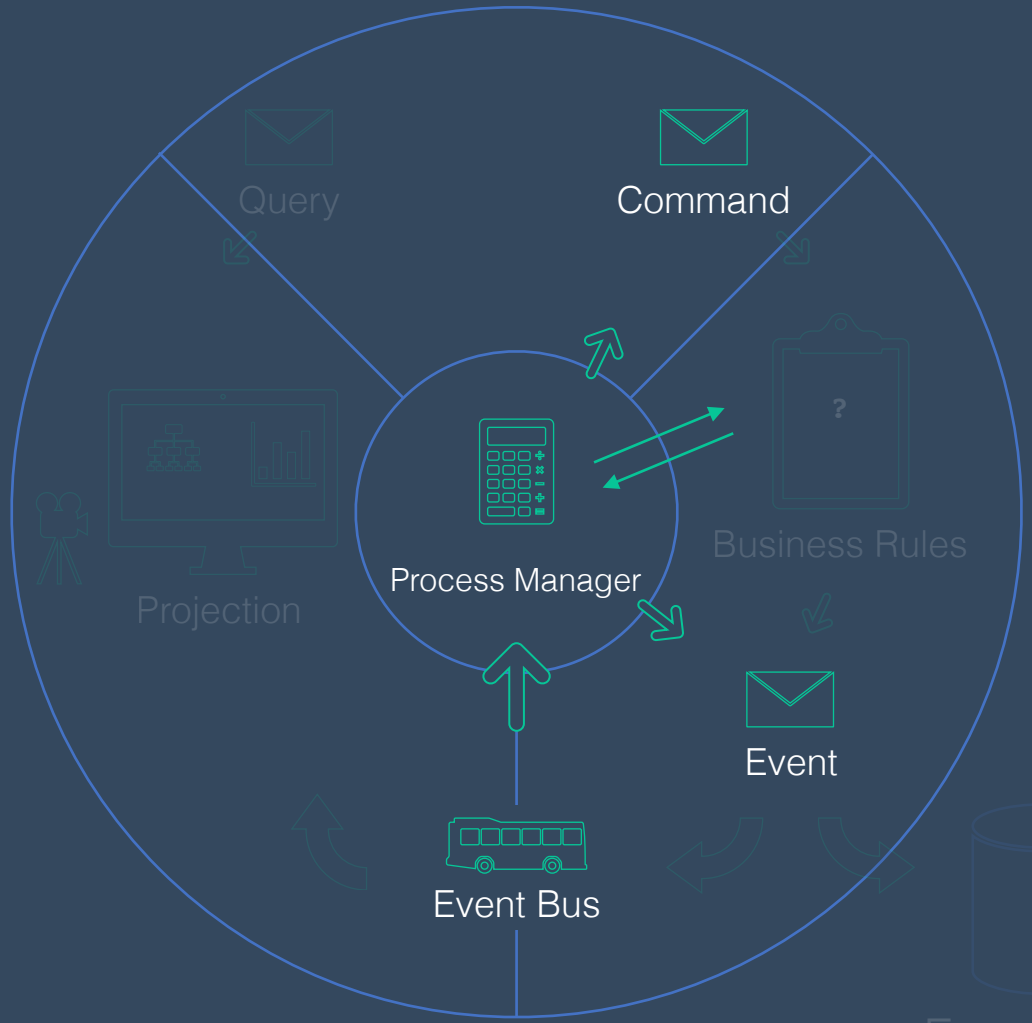
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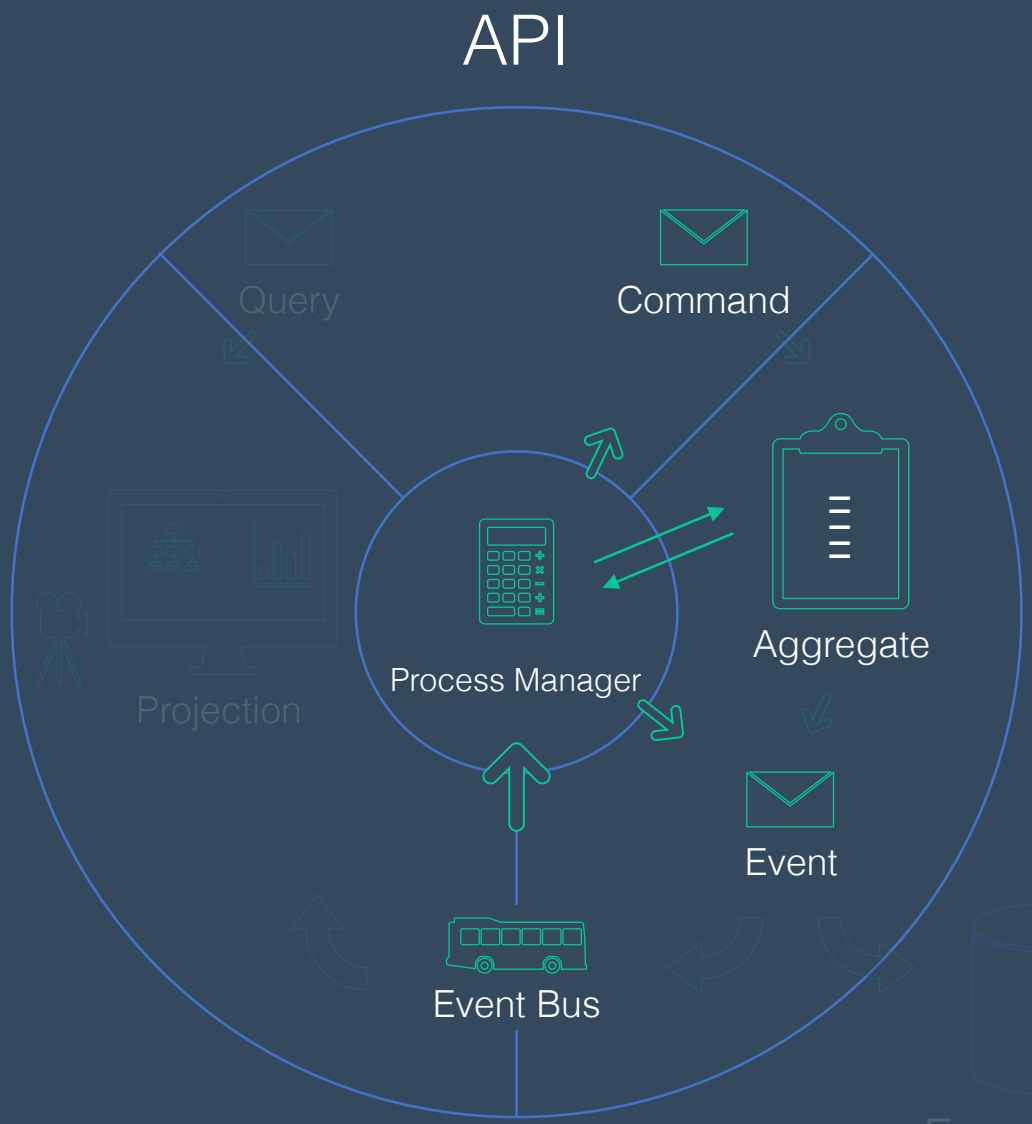
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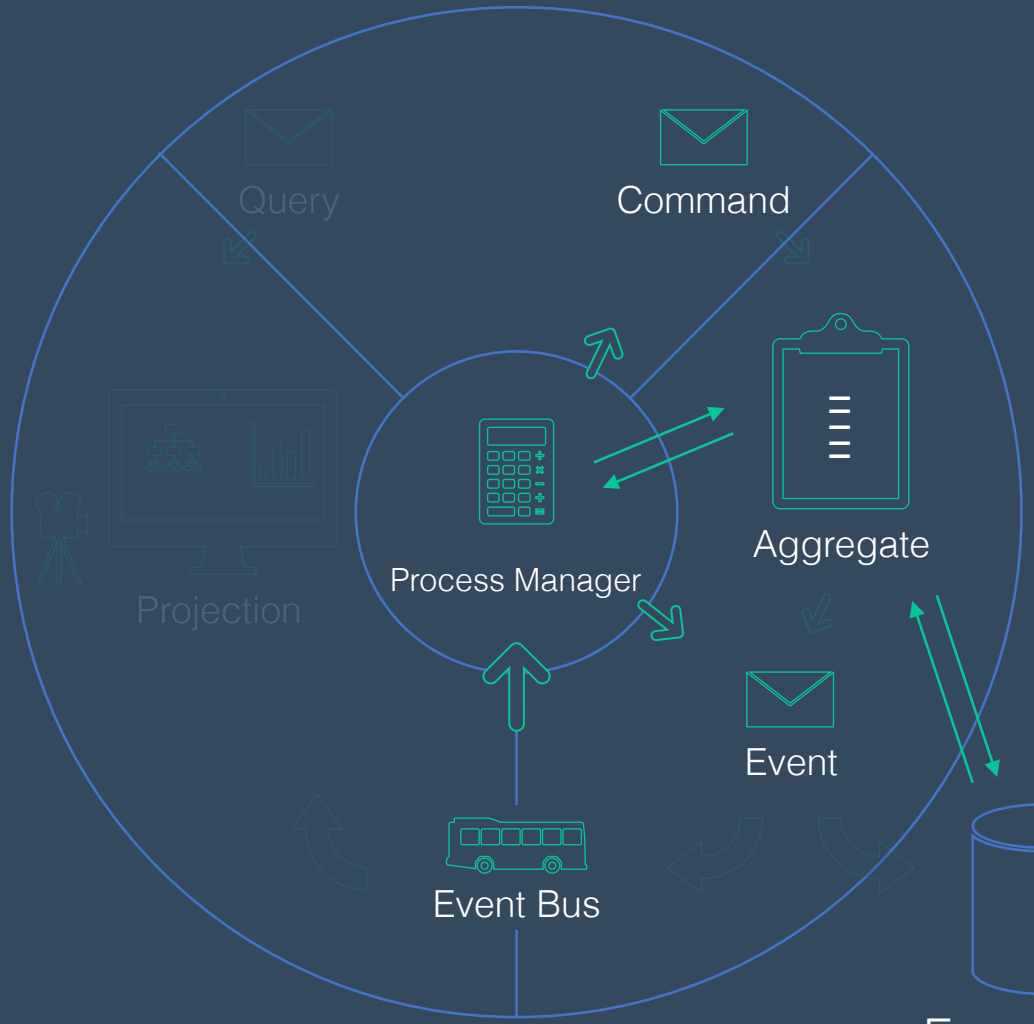
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CQRS-ES

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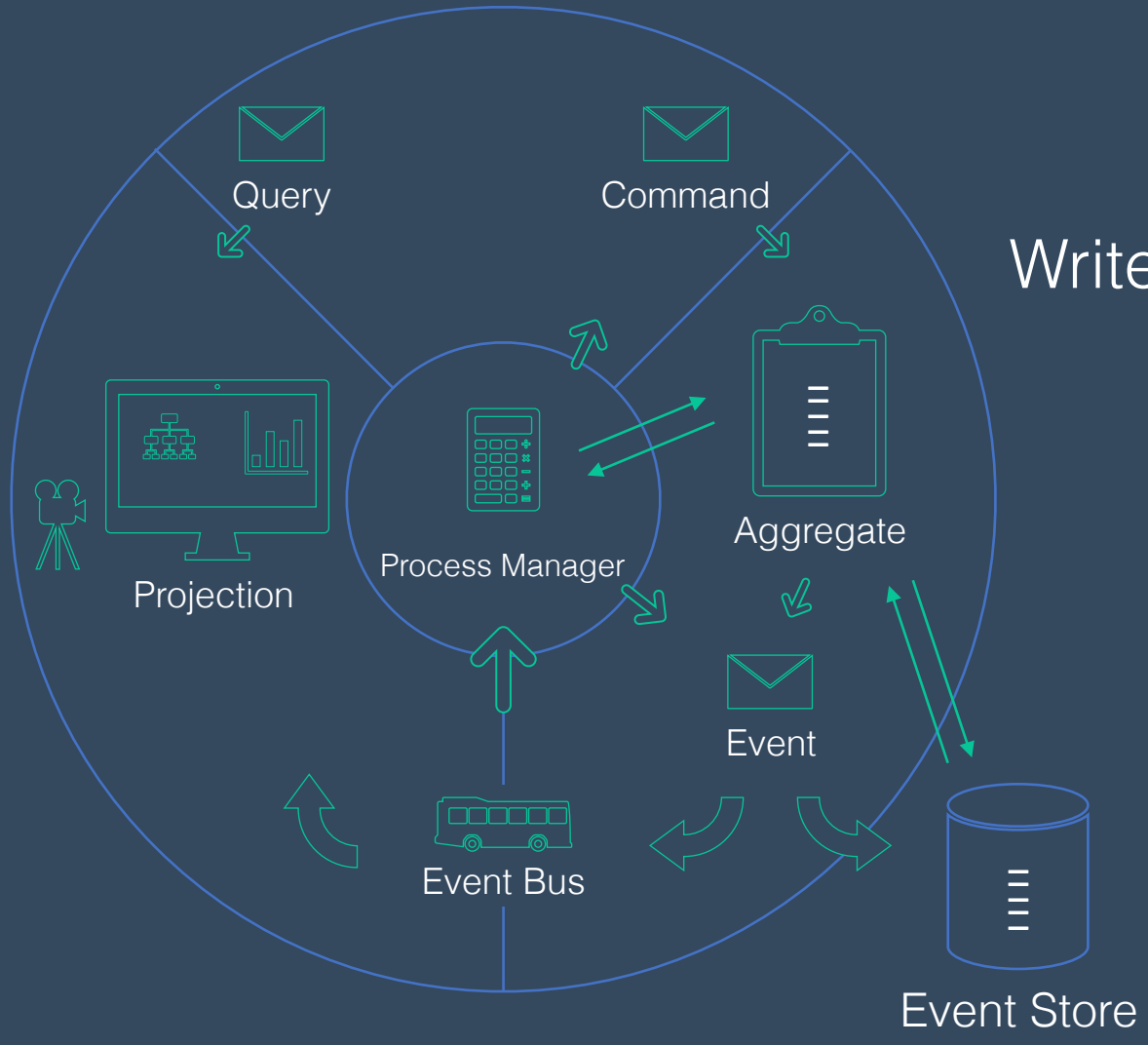
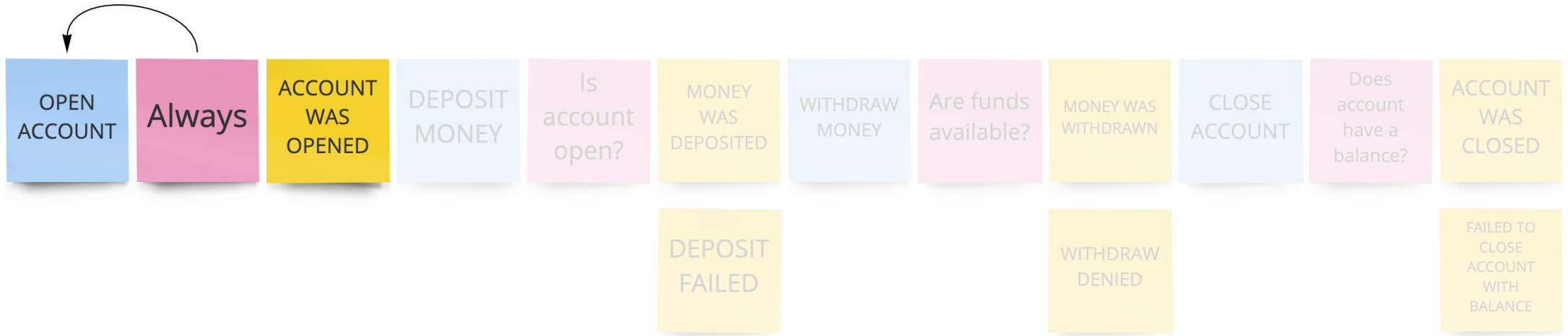


Just Do It!

TDD Example

Bank Account



Bank Account Example

UNIT TEST

```go
func TestOpenAccount_Emits_AccountWasOpened(t *testing.T) {
    // Given
    app := NewTestApp()

    // When
    app.Execute(
        bank.OpenAccount{
            AccountId: accountId,
        })

    // Then
    ExpectEmittedEvents(t, app,
        bank.AccountWasOpened{
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}
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}
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COMMAND HANDLER

```
func (a *App) Execute(command interface{}) {
    switch c := command.(type) {

    case OpenAccount:
        a.handleWithAccountAggregate(c.AccountId, command)

    }
}
```

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        a.handleWithAccountAggregate(c.AccountId, command)

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AGGREGATE

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            AccountId: c.AccountId,
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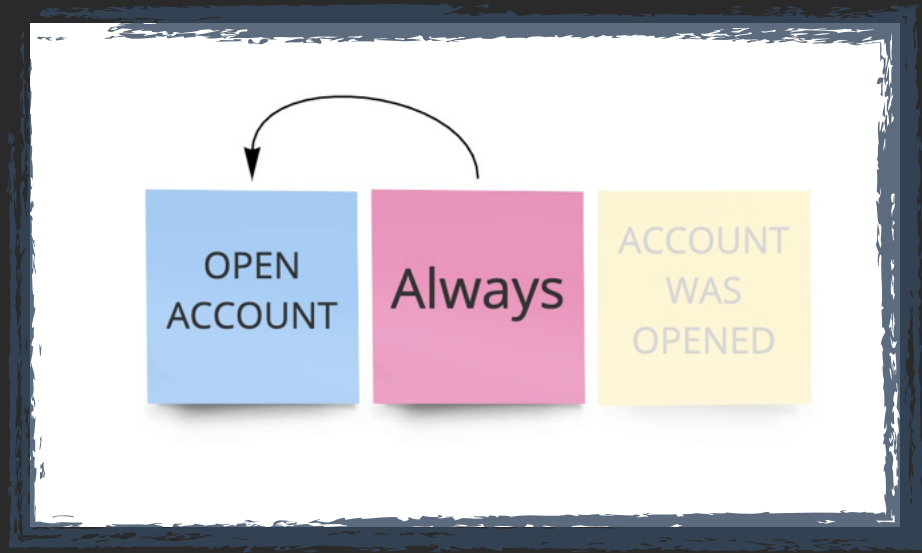

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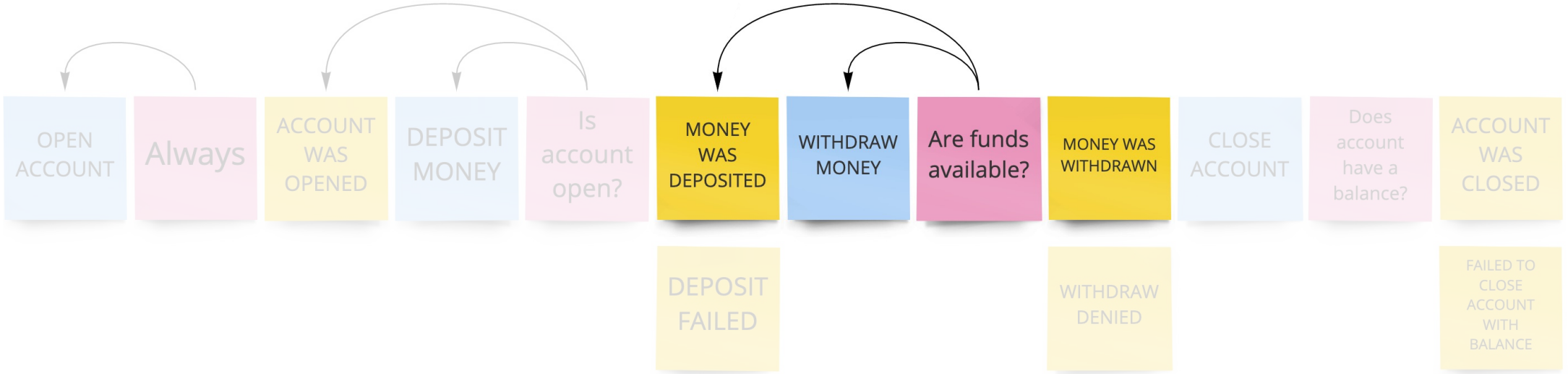


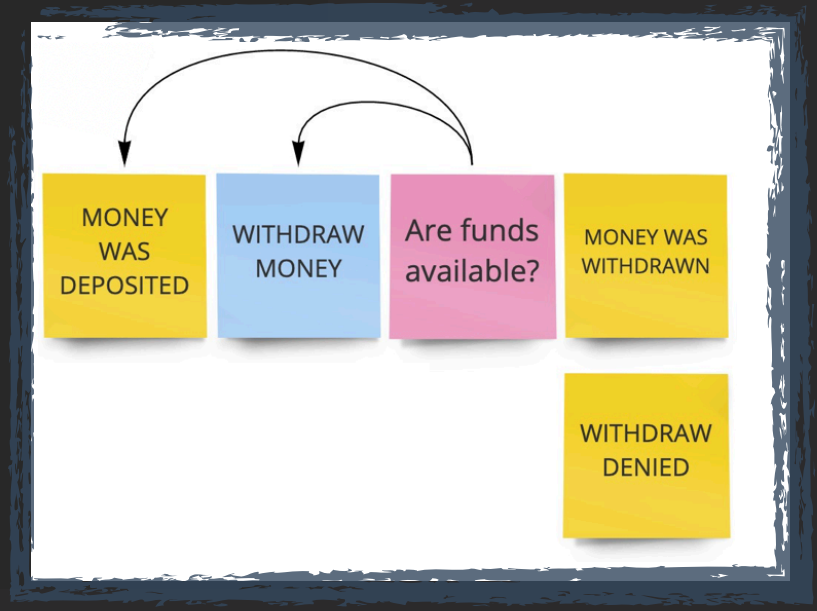
Bank Account Example

UNIT TEST

```
func TestWithdrawMoney_WhenFundsAreAvailable_Emits_MoneyWasWithdrawn(t *testing.T) {
    // Given
    app := NewTestApp()
    app.AcceptEvents(
        aggregateId,
        bank.AccountWasOpened{
            AccountId: accountId,
        },
        bank.MoneyWasDeposited{
            AccountId: accountId,
            Amount:    100,
        })

    // When
    app.Execute(
        bank.WithdrawMoney{
            AccountId: accountId,
            Amount:    75,
        })

    // Then
    ExpectEmittedEvents(t, app,
        bank.MoneyWasWithdrawn{
            AccountId:  accountId,
            Amount:     75,
            NewBalance: 25,
        })
}
```



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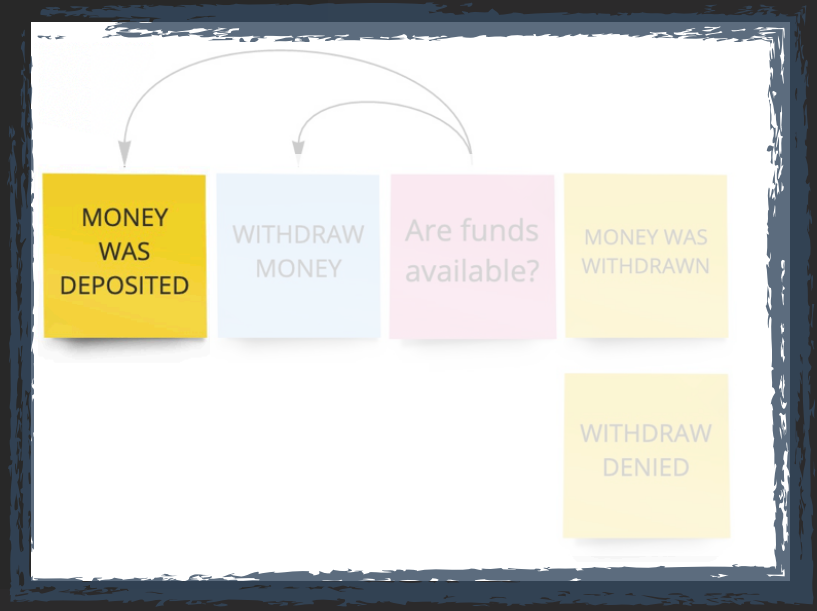

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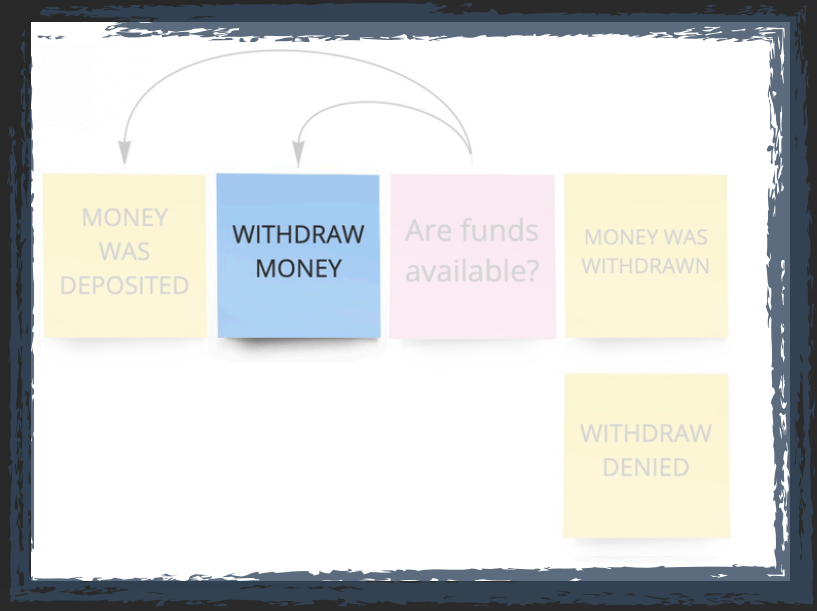

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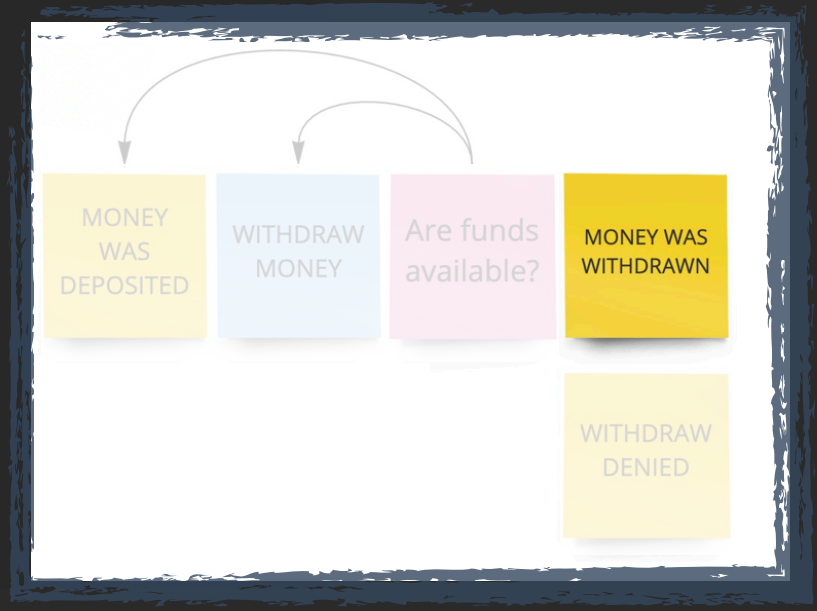

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    case DepositMoney:
        a.handleWithAccountAggregate(c.AccountId, command)

    case WithdrawMoney:
        a.handleWithAccountAggregate(c.AccountId, command)

    }
}
```

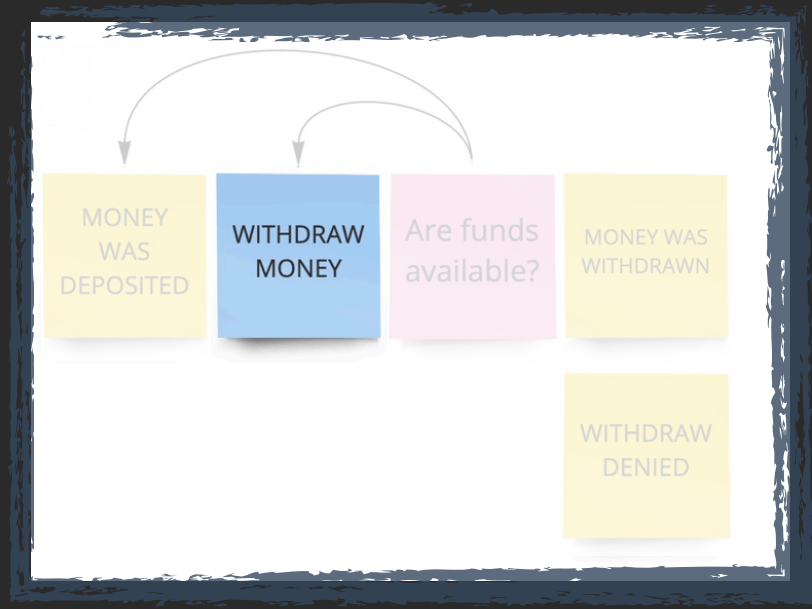

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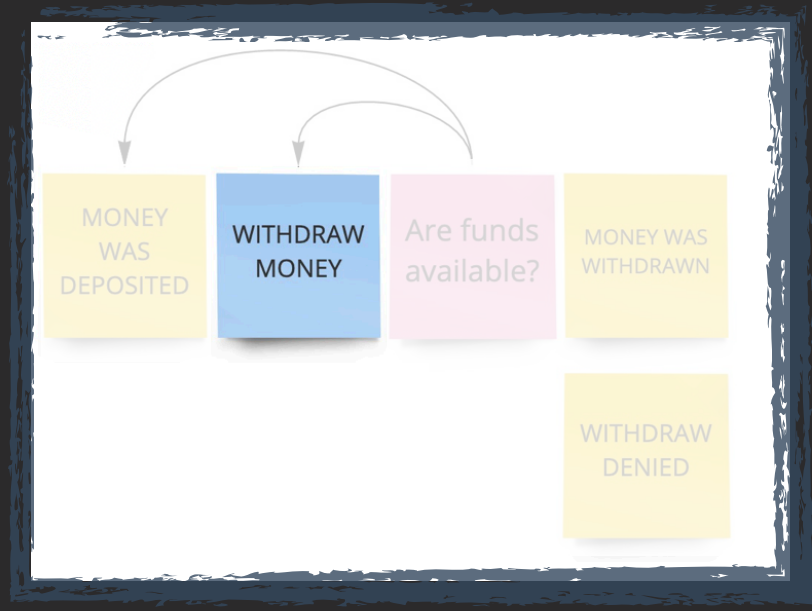

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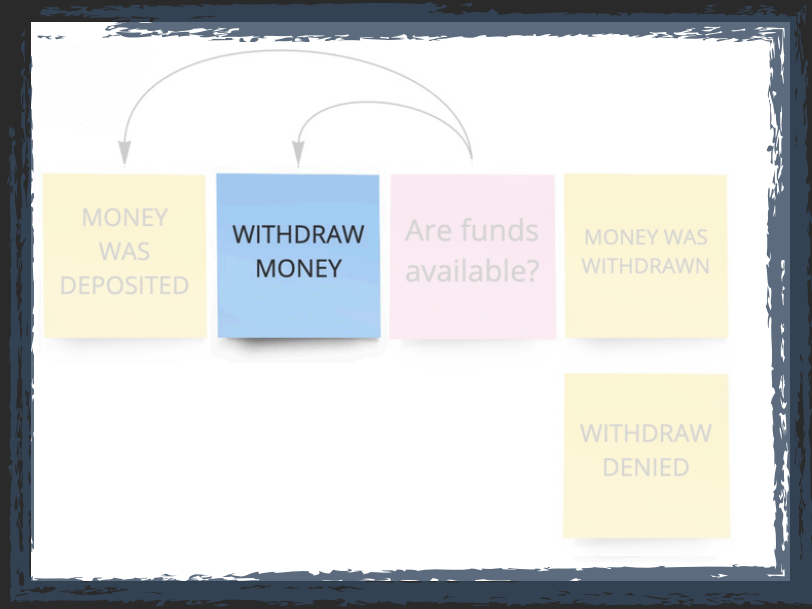

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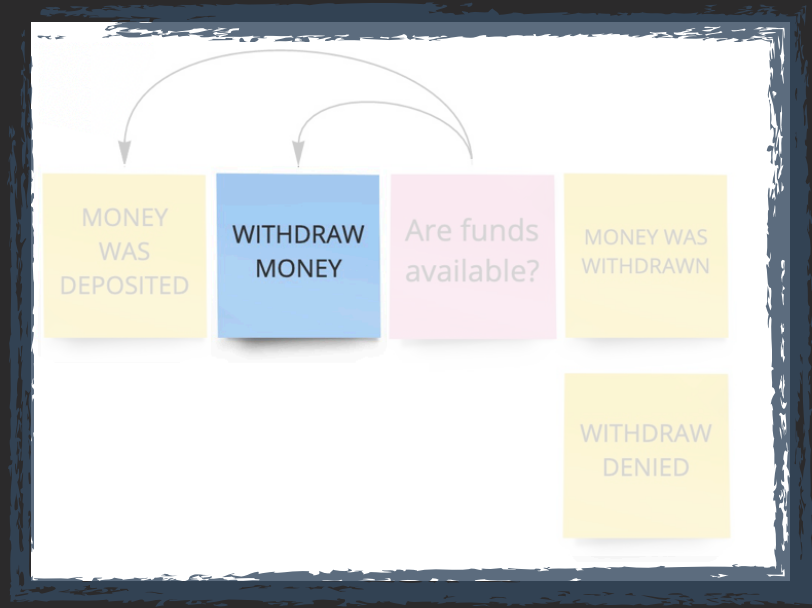

AGGREGATE

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func (a *AccountAggregate) transition(e event.Event) {
    switch e := e.(type) {

    case AccountWasOpened:
        a.state.isOpen = true

    case MoneyWasDeposited:
        a.state.balance += e.Amount

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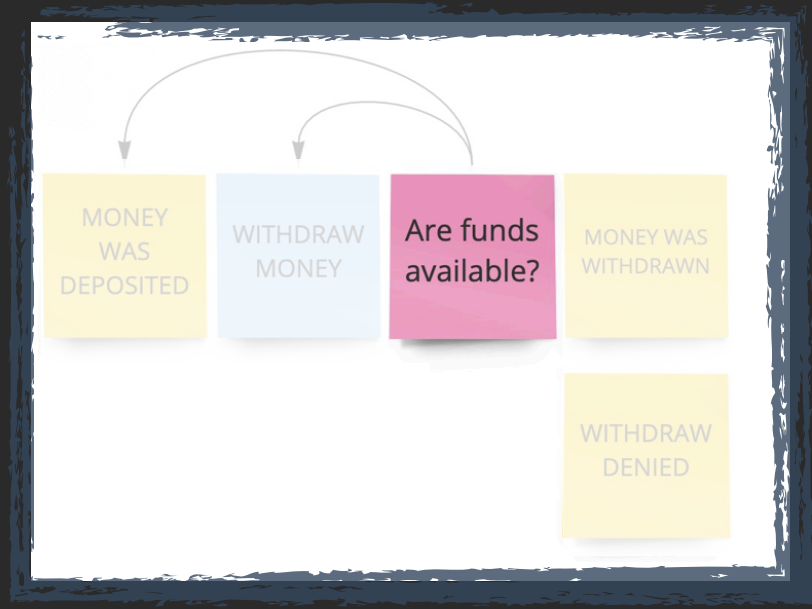

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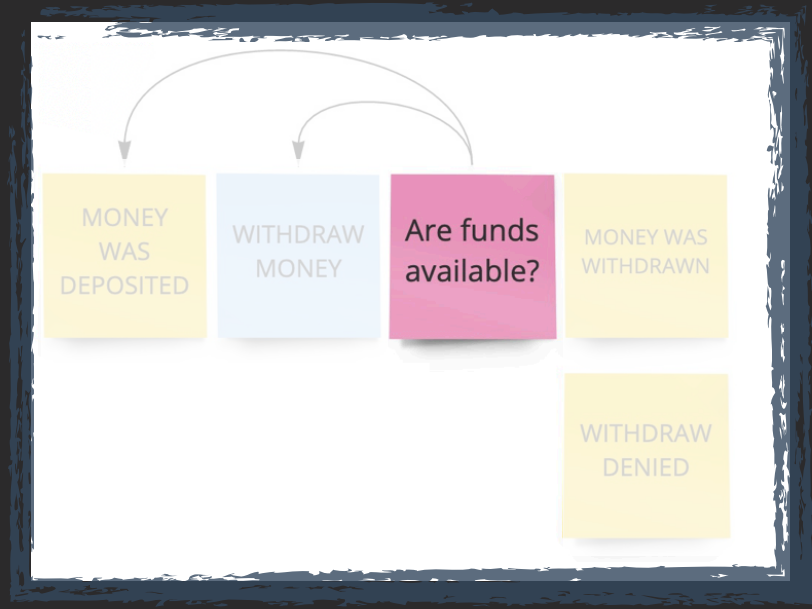

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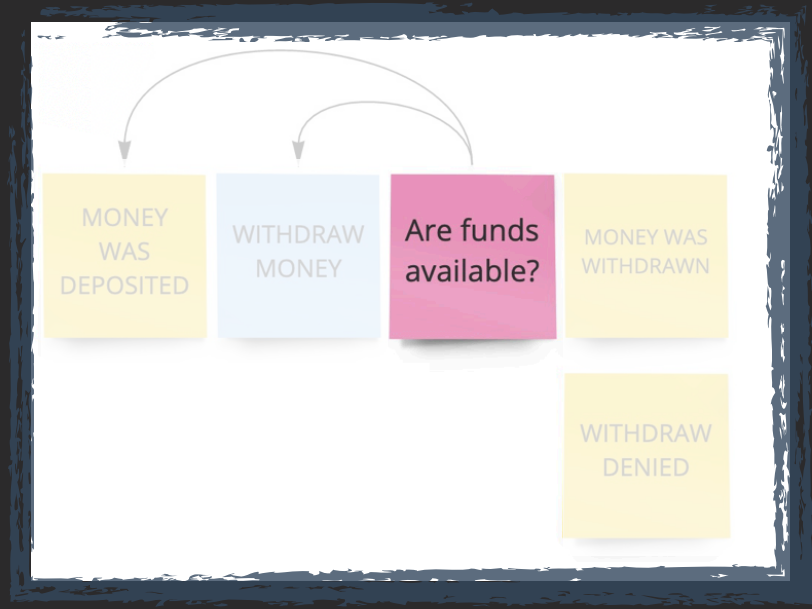

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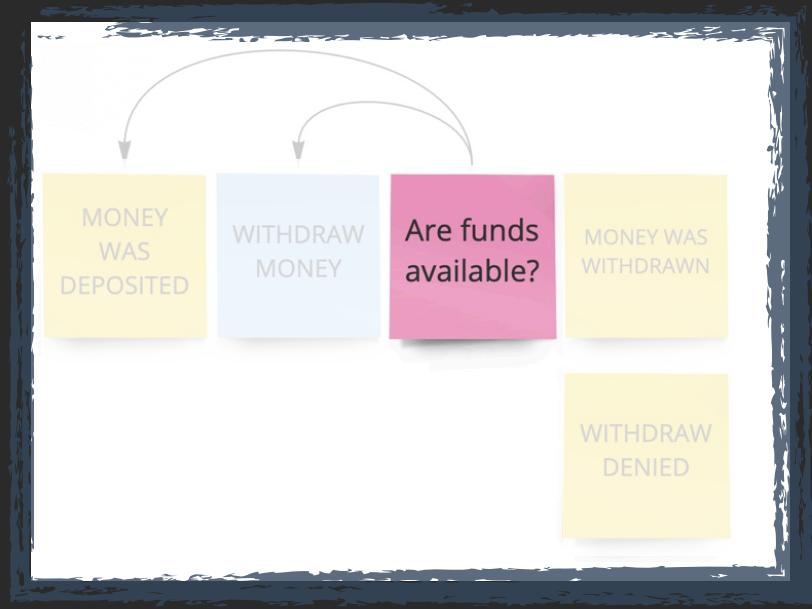

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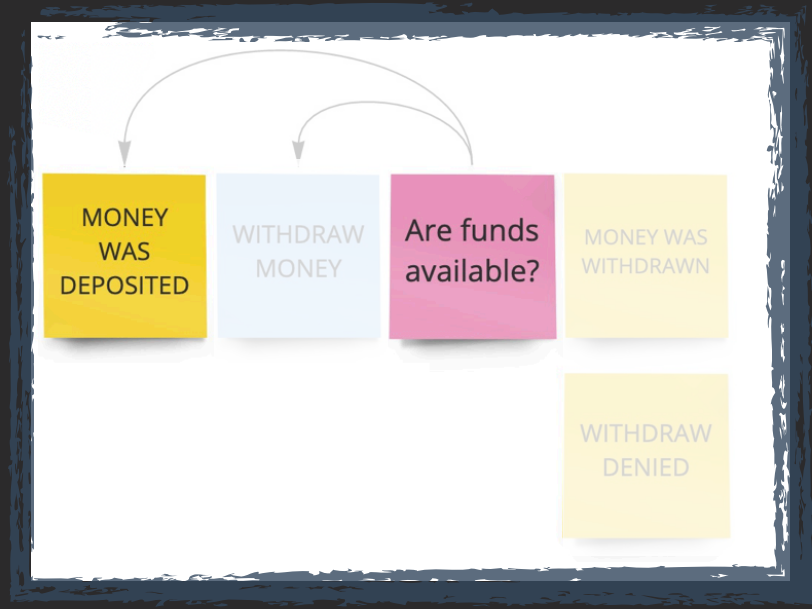

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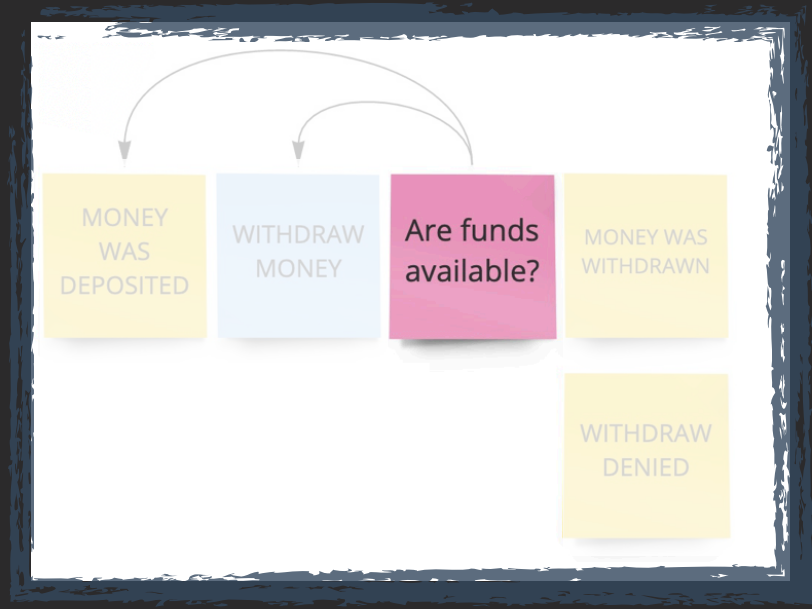

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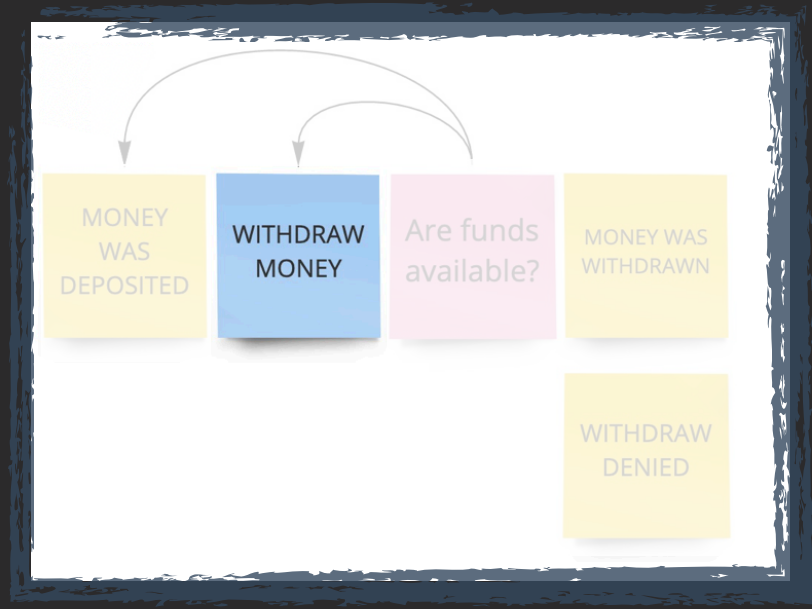

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                AccountId:      c.AccountId,
                Amount:         c.Amount,
                CurrentBalance: a.state.balance,
            })
            return
        }

        a.emitEvent(MoneyWasWithdrawn{
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            NewBalance: a.state.balance - c.Amount,
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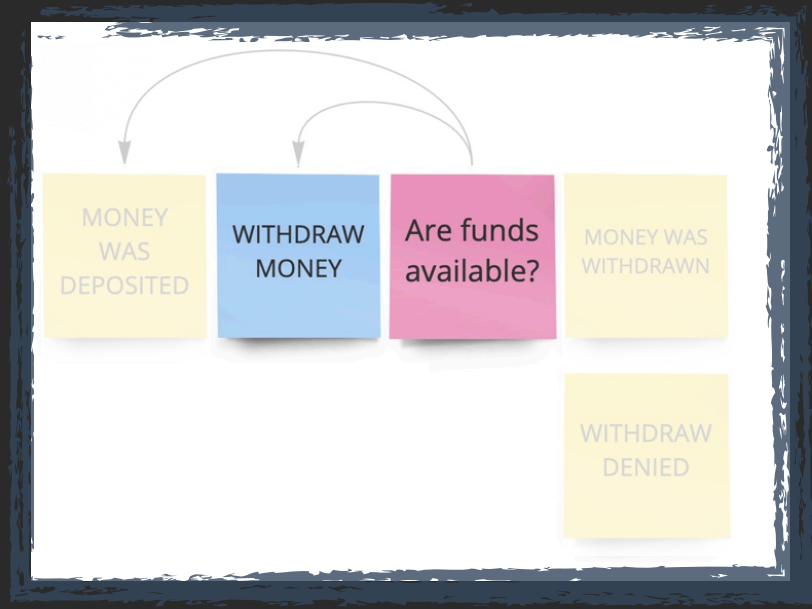

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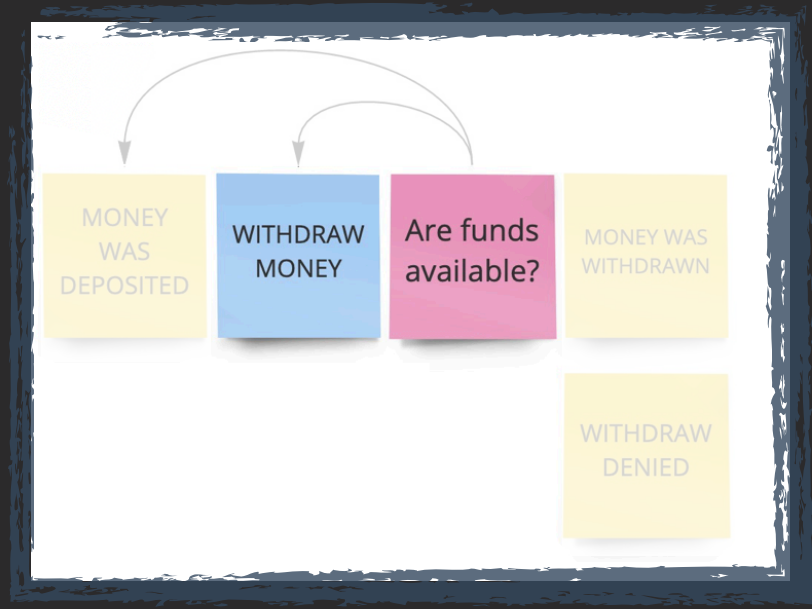

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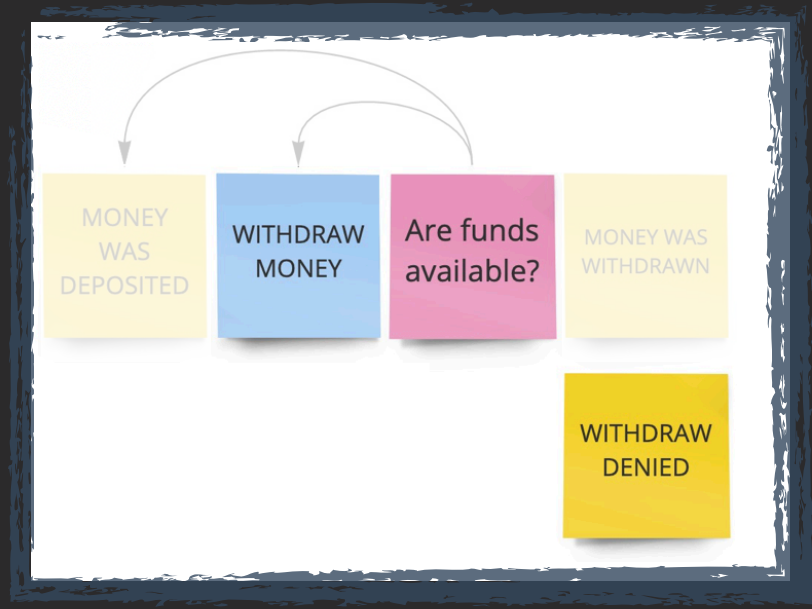

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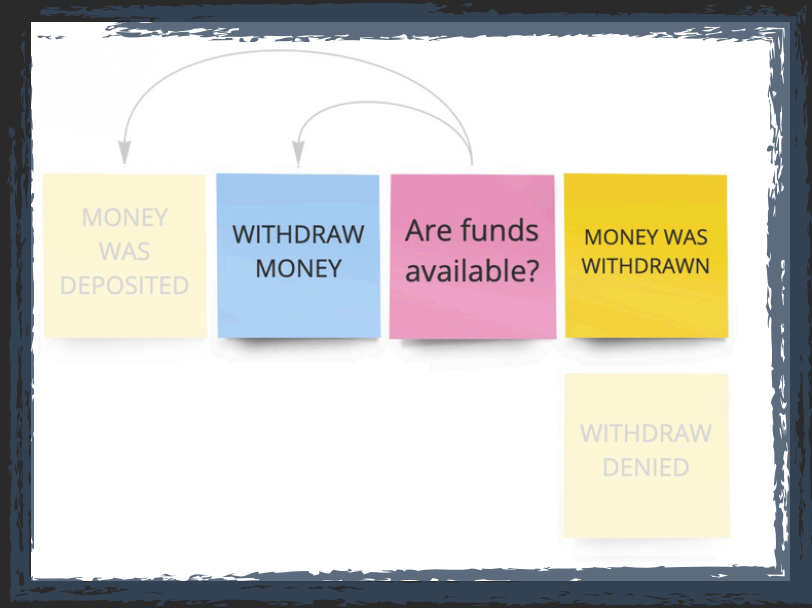

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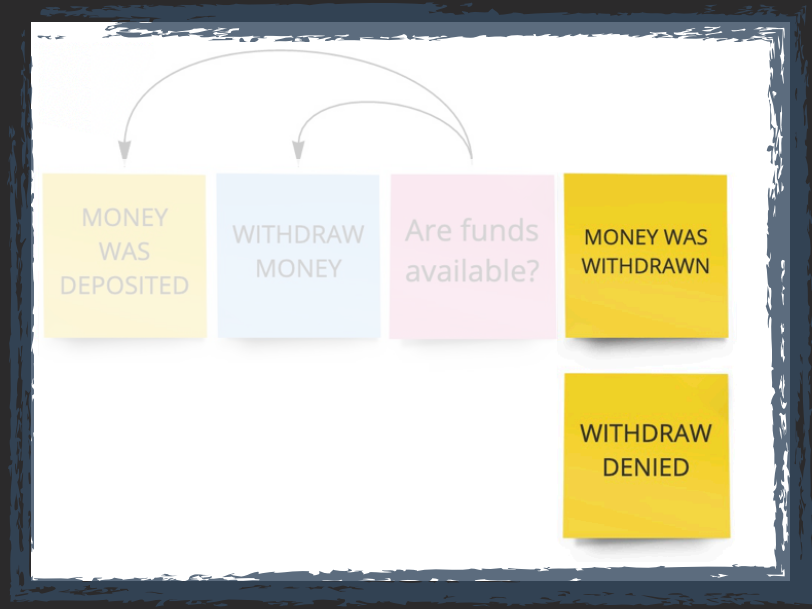

Questions?

Feedback is welcome